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Original Articles.

CHOLECYSTITIS; CHANGES PRODUCED BY THE REMOVAL OF THE GALL-BLADDER.*

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PATHOGENESIS.

THE etiology of cholecystitis possesses many phases of which we have no definite knowledge. We all agree that non-neoplastic surgical diseases of the biliary tract are the result of bacterial infection. There may be one exception to this statement: Archibald[1] contends, and many of us believe that pancreatitis is often if not always due to chemical changes in the pancreas. It was formerly supposed that infection in the gall-bladder was secondary to that in the biliary ducts; that infection in the ducts was more prone to subside, while that in the gall-bladder would persist.

Stagnation of bile in the gall-bladder is thought to be the main predisposing cause of cholecystitis. Bacteriologic study of the bile and the contents of the gall-bladder of patients operated on for the removal of stones, has shown sterile cultures in more than 50%, according to several investigators (Deaver[2]). Attention has been called to the fact that many patients are operated on as a result of the infection rather than because of active infection and, on this account, figures may give an erroneous impression. Several investigators have found organisms in the calculi when the bile was sterile.

There are many avenues through which bacteria may reach the biliary ducts and gall-bladder. A great deal has been said about their entrance by way of the portal circulation and through the liver and hepatic duct. It seems to me there can be no question but that infection of the bile passages may and does, at times, take place in this manner. It has also been proved that bacteria may pass from duodenum through the ampulla into the common duct and thence through the cystic duct into the gall-bladder. However, the duodenum normally is almost free from bacteria, and infection through this channel probably does not occur as often as we formerly supposed. The frequency of the coëxistence of an ulcer of the duodenum and cholecystitis is well known. Does it not seem probable that in these cases cholecystitis is a secondary infection caused by organisms from the ulcerated area in the duodenum which have reached the gall-bladder through the common duct? According to Rosenbw, it must be borne in mind that before an infection entering through the lumen of the cystic duct can reach the tissues of the gall-bladder, it must penetrate the lining mucous membrane, which, like similar structures in other viscera, was probably intended to resist just such an invasion. This is well illustrated in the urinary bladder, for often a markedly infected kidney will pour infected urine into the bladder for a long time before there is any evidence of infection in the bladder itself. It should be recognized, however, that infection from either the liver or the

* Read before the Suffolk District Medical Society, Mar. 8, 1916.

duodenum may enter the gall-bladder by way of the common duct. Does it not seem probable that these organisms, especially in the presence of stagnant bile, become foci for stone-formation without necessarily producing an infection in the wall of the gall-bladder?

The important and most valuable work of Rosenow[3] has not only renewed our interest in the systemic circulation as a possible route for most of those infections, but it also had a tendency to change our methods of procedure in the treatment of these cases. We know that in a large percentage of these patients, the infection is really in the wall of the gall-bladder and that it reaches the tissues through the blood vessels. Rosenow has produced similar lesions in animals and has demonstrated the selective action of the bacteria. The organisms with which his results were obtained were mainly isolated from the involved tissues or from the lymph-glands draining the infected area. Twelve strains isolated from the tissues of patients who had cholecystitis produced lesions of the gall-bladder in 80% of 41 animals injected. Contrast this with the average of only 11% which was obtained with the other strains. I do not believe the importance of the systemic circulation as an avenue of infection was recognized formerly. It will be readily seen that if the infection is in the bile only, the removal of the stones and drainage will be quite sufficient, while if the disease is in the tissues of the gall-bladder, drainage will afford relief only temporarily unless the infection is slight.

It is difficult to recognize all cases of cholecystitis even when the abdomen is open so the gall-bladder can be seen and felt. The normal gall-bladder is primarily soft and collapsible, though it is often so tense and firm that we are unable to empty it. I have noticed this condition a great many times in cases in which there was no other suggestion of inflammation. The color of the gall-bladder, the consistency of the bile, the appearance and thickness of the mucous membrane, all help in making a diagnosis of cholecystitis. C. H. Mayo[4] has called attention to the enlargement of the regional lymphatics as a most important factor in determining the presence of inflammation in the gall-bladder, if there is no evidence of ulceration in the duodenum. Hard, nodular enlargement of the head of the pancreas has been noted in conjunction with the enlargement of the lymphatic glands. In many of these cases the clinical history may be the chief factor in determining the diagnosis, other gross lesions, such as ulcer and inflammation of the appendix, having been excluded.

Interval attacks are not nearly so pronounced in cases of chronic cholecystitis when there is considerable inflammation of the gall-bladder, as in cases in which stones in the gall-bladder appear to be the main factor and there is little infection in the tissues. It is essential to recognize the fact at operation that the inflammation in the gall-bladder may have almost subsided, and we are obliged to depend a great deal on the clinical history. Usually it is not a good plan to base operative procedures on clinical history unless it is supplemented by pathologic findings. However, in some of these cases of cholecystitis in which the pathology is not very definite and the clinical history is clear, we are obliged to base our operation, to a certain extent, on the clinical history unless we are able to find something else that will explain the symptoms. To illustrate this point I may say that I recall a number of patients whose histories were typical of gall-bladder disease and on exploration no calculi or recognizable inflammation of the gall-bladder were found. However, these patients continued to have symptoms and after some months, or possibly several years, a second operation was performed and a definite cholecystitis, possibly with stone formation, was found. This seems to indicate that cholecystitis existed at the time of the exploratory operation, though it was not recognizable. Acute and chronic catarrhal conditions produce great thickening and edema of the walls of the gall-bladder. Due to the fine, white lines on the mucous membrane, chronic catarrhal or strawberry cholecystitis may frequently be recognized before the gall-bladder is opened, though a definite diagnosis cannot often be made until it is opened.

Malignant disease of the gall-bladder occurs rarely, though in our clinic, as pointed out by C. H. and W. J. Mayo,[5] it has always been associated with gall-stone formation. During the past year I operated on a man for recurring symptoms of gall-bladder disease. He had been operated on nine years previously at another clinic and stated that a great many stones were removed at that time. He had remained entirely well until a few months before consulting us, when there was a return of former symptoms. On exploration I found a very thick-walled gall-bladder, the induration extending to the ducts and the surface of the liver. I removed the gall-bladder, which proved to be malignant. No trace of stones either in the gall-bladder or ducts could be found. The patient had never been jaundiced. He died about three months after returning home.

Empyema of the gall-bladder, either acute or chronic, is easily recognized. The walls are thick, there is much fibrous tissue, and often complete destruction of the mucous membrane. The treatment of this condition is still a debatable question. I believe, however, that most surgeons feel there will be less mortality, all factors considered, if the gall-bladder is removed. In certain cases it will seem advisable to do the operation in two stages.

Much has been said about chronic catarrhal cholecystitis in which the mucous membrane has the appearance of a ripe strawberry (MacCarty[6]). The principal change, grossly, consists

of the erosion of the apices. These desquamations present themselves as yellow specks scattered throughout the mucosa. Often there are no stones present, though the fine, white specks observed on the mucous membrane have frequently been mistaken for cholesterin stones. At our clinic in the year 1913 we operated on 21 patients who had strawberry gall-bladders with no evidence of stone formation. The appendix was removed as a secondary operation in most of these, but chronic cholecystitis was the chief pathologic lesion. In nearly every instance the symptoms were those produced by inflammation of the gall-bladder. I have recently traced them by letter, and 12 of the 21 report that they are entirely well and relieved of all symptoms; 5 report that they are greatly relieved, though not entirely well; 3 report no improvement, and 1 says he is worse. The removal of the gall-bladder practically cured 17 of the 21 patients. This type of cholecystitis is often found at autopsy on persons who seem to have had few, if any, symptoms due to the inflammation; similarly, some years ago, the so-called "innocent" gall-stones were found. In reviewing the records of 577 autopsies in our clinic on persons dying from other causes, I found 26 cases in which the pathologist had reported a chronic catarrhal condition of the gall-bladder of the strawberry type, though a recognizable clinical history of gall-bladder trouble had not been obtained. This means that the condition which caused death offset the symptoms of chronic cholecystitis. In all probability evidence pointing to the inflammation in the gall-bladder would have been obtained in a more carefully taken general history. It certainly would have been discovered if the more important lesions which caused death had not been present. This also suggests that a certain degree of chronic cholecystitis may exist without producing much evidence of trouble.

The Function of the Gall-Bladder and the Effects of its Removal.

The exact function of the gall-bladder has never been definitely established. It is most often spoken of as the reservoir for bile. However, this theory has been questioned by many investigators since this comparatively small diverticulum which holds at most only a few ounces, would seem inadequate, if we consider the normal output of bile from 30 to 50 ounces in 24 hours. C. H. Mayo and Deaver are of the opinion that the gall-bladder acts as a tension-bulb and that during fluctuations of pressure in the ducts, the gall-bladder may spare the parenchyma cells of the liver from back pressure. These fluctuations of pressure probably occur as a normal consequence of digestion, or they may be due to pathologic changes—an increase or decrease in the secretory power of the liver cells. The physiologists tell us that the secretion of bile is continuous, but that its output into the duodenum is not constant and coincides exactly with the period of digestion in which acid chyme is spurted in rhythmic jets from the stomach into the duodenum. They say that bile secreted by the liver in the interval must collect in the gall-bladder, where it is condensed through the absorption of water. Flexner[7] has shown that if mucus from the gall-bladder is mixed with the bile, it is very much less irritating to the pancreas.

Since so many surgeons consider cholecystectomy the operation of choice, it is interesting and important to know just what changes take place after the removal of the gall-bladder. We have much evidence to show that man may exist very comfortably and apparently indefinitely without a gall-bladder. Some months ago at my request Mann and Sistrunk* removed the gall-bladders from a number of dogs. The wounds were closed with catgut and for that reason some of the animals were lost shortly after operation. The dogs which survived have been studied at various intervals. Twelve of the first series of animals lived more than 30 days; 10 of the 12 at autopsy showed dilatation of the common, hepatic or cystic duct. In some instances the cystic duct was not dilated, apparently because it had been ligated very close to the common duct. None of these animals seemed to be inconvenienced by the removal of the gall-bladder. Some of them died very shortly after operation but apparently the removal of the gall-bladder had nothing to do with the cause of death. A careful examination of the animals that lived only a short time, did not reveal any changes in the ducts, liver or pancreas, while all the dogs that lived more than 60 days, at autopsy showed some dilatation of the common duct. There was considerable variation in the amount of dilatation, though the duct was usually two or three times its normal size. Dilatation seemed to be greatest in the hepatic duct; however, it invariably stopped at the surface of the liver, and in none of the animals was there any enlargement of the ducts within the tissues of the liver, nor was there any macroscopic or microscopic change in the liver, the pancreas or the pancreatic ducts, in the several instances in which these organs were examined. The pancreatic ducts did not show dilatation. Unquestionably, dilatation of the ducts is at least partly due to the pressure caused by the resistance of the sphincter at the ampulla of Vater (Figs. 1-5). Oddi[8] first demonstrated the presence of this sphincter; its activity has been most carefully worked out by Archibald. Although dilatation of the ducts is probably chiefly caused by the bile being held back by the constrictor muscles at the ampulla, eventually dilatation may overcome the action of this sphincter. Two dogs that had had their gall-bladders removed two months previously showed almost complete absence of sphincter action, and a cannula introduced into

* In the Laboratory of Experimental Surgery, Mayo Foundation.

FIG. 1.—Photograph of the under surface of the liver of a normal dog. The biliary tract and a segment of duodenum are distended with air.

FIG. 2.—Photograph of the under surface of the liver of a dog of approximately the same size and weight as in Fig. 1; the gall-bladder had been removed 214 days previously. Marked dilatation of the common and hepatic ducts.

the dilated common duct carried water through the ampulla into the duodenum with no apparent resistance. An active sphincter will resist from 300 to 600 mm. of water pressure. If we can demonstrate that the dilatation of the ducts (which follows the removal of the gall-bladder) results in paralysis or laxity of the muscle at the ampulla, the cure of inflammation of the pancreas by the removal of the gall-bladder may be explained.

The experiments of Opie[9] and Flexner show that the injection of bile salts into the pancreatic ducts invariably produces pancreatitis. Why is it, then, that cholecystectomy is not always followed by a very severe irritation of the pancreas? If cholecystectomy is performed, the source of the mucus is removed. The mucus mixed with the bile apparently protected the pancreatic tissues. It would seem also that immediately after the removal of the gall-bladder there should be a distinct increase of pressure in the common duct and a considerable quantity of bile would be more freely forced back into the pancreatic ducts. Possibly this explains the rather severe reaction (especially vomiting of bile and quick pulse) which sometimes persists for a few days after cholecystectomy. We have known for a long time that removal of the gall-bladder cured a large percentage of cases of pancreatitis (W. J. Mayo[10]). After a very thorough experimentation and clinical study, Archibald concludes that nearly all cases of pancreatitis are due to irritation of the pancreas as the result of bile entering the pancreatic ducts, in other words, that pancreatitis is caused by chemical changes rather than bacterial. The cure of pancreatitis which has been produced in this way would necessarily lie in the paralysis of the Oddi sphincter. This would allow the bile to flow into the duodenum unobstructed.

FIG. 3.—Photograph of the under surface of the liver of a dog from which the gall-bladder had been removed 122 days previously, showing distended gall ducts.

Fig. 4.—Photograph of the same specimen as in Fig. 3, gall ducts opened showing the accumulation of stones, which apparently had caused the dog no inconvenience. No evidence of stones at the time of cholecystectomy.

Archibald suggests an operation which he has performed experimentally to paralyze this sphincter. From our experiments we feel sure that the dilatation of the common duct which always follows cholecystectomy will eventually result in a paralysis of the sphincter, that the bile will flow into the duodenum with little or no back pressure; and the symptoms produced by irritation to the pancreatic tissues will be entirely relieved. We are endeavoring to produce paralysis of this sphincter at the time the gall-bladders are removed from animals, and in this way we try to show that the dilatation which follows is the result of sphincter action.

Dilatation of the common duct following removal of the gall-bladder is frequently seen at the operating table. However, it is often complicated by stones in the common duct. I have often observed this condition in patients having hydrops of the gall-bladder, and as the stone obstructs the common duct, the organ is out of commission. Often patients have not given a history of having had a stone or infection in the common duct, and at operation the duct is found markedly dilated but free from stone. A similar condition is also observed in cases of very marked cholecystitis in which the infection is so extensive that in all probability the gall-bladder has ceased to functionate. For a long time it has been known that the dilatation of the ducts called "compensatory dilatation" does result from the removal of the gall-bladder. Oddi and Rost[11] have called especial attention to the condition.

If the pancreatitis which results in some of these cases is due to lymphangitis, as suggested by Deaver and Pfeiffer,[12] the removal of the gall-bladder would also cure this condition, because in most instances unquestionably the primary infection is in the gall-bladder, and from it extends along the lymphatics of the ducts and then into the glands throughout the pancreatic lobules. The two cases following serve to illustrate the changes to be expected after cholecystectomy:

Case (A-145,438) Mrs. J. B., 56 years of age, a housewife living on a farm, was examined Nov. 10, 1915. Family history negative. There had been no previous diseases, injuries or operations. Her chief complaint was nausea, vomiting and pain in the abdomen. She was very weak, unable to walk, and came to the clinic in a wheel-chair. While her history was being taken, she vomited several times.

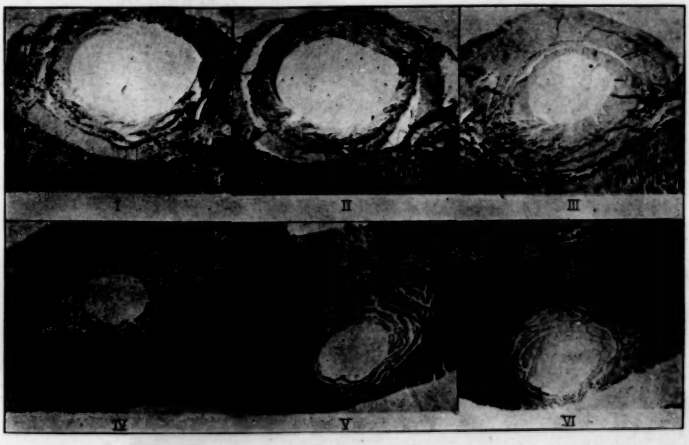

Fig. 5.—Photomicrographs of cross sections of the different parts of the common bile duct. No. I is a section through the duct just at its entrance into the duodenal wall. Nos. II, III, IV show the different intramural portions of the duct. Nos. V and VI show the passage of the duct through the mucosa. Note the change in the size of the lumen, the variation in the amount of muscle surrounding the duct, and its relation to the duodenal mucosa.

Her husband stated that the vomiting had begun suddenly and had persisted since August, with much bile in the vomitus and general abdominal pain. She had been able to drink some water and thought that this had preserved her. She was markedly emaciated and prostrated. Examination of the chest and pelvis was negative. Reflexes were normal; skin dry; throat parched; tongue red; peristalsis visible, and also noticeable on palpation.

It was apparent that the woman was suffering from chronic obstruction, most likely in the intestines, though we were unable to say definitely that it was not gastric. On account of her weakened condition, no further examinations were made and it seemed best to do an immediate exploration. A right rectus incision was made Nov. 15, 1915. The gall-bladder was markedly dilated; there was considerable dilatation of the common duct, though no stones could be felt. The obstruction was caused by intussusception in the small intestine, beginning about five feet from the duodeno-jejunal juncture. It was impossible to reduce the intussuscepted loop and we did a resection, removing about three feet of the small intestine. The end of the bowel was closed and an end-to-end anastomosis made. The patient did not rally from the operation and died in 24 hours.

Autopsy revealed an interesting condition of the gall-bladder. It was markedly distended, and upon opening we found chronic cholecystitis of the strawberry type and papilloma. It was filled with a dirty, tenacious, bile-stained mucus. The gall ducts were also markedly distended; the hepatic duct 2 cm. in diameter, the common duct 1 cm., and the cystic duct 1 cm. At a point 3 cm. from the gall-bladder, the cystic duct was obstructed by a ring of inflammatory, fibrous tissue which had contracted around it. A probe could not be passed through the duct from below upward or from above downward, neither could fluid be forced through it. Aside from this stricture the ducts were patent. No stones or inspissated bile were found in the ducts. The liver was slightly enlarged; the bile ducts were filled with mucus; the pancreas negative (Fig. 6).

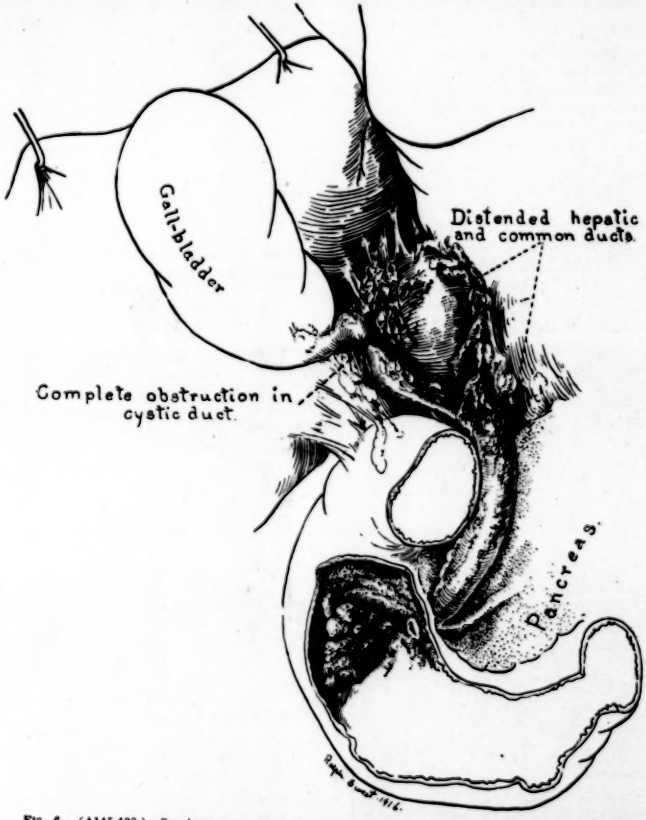

FIG. 6. (A145,438.)—Specimen removed at autopsy. Complete closure of the cystic duct, evidently of long-standing. Common duct dilated to 12 mm. in diameter. Stricture of the cystic duct has produced a condition similar to that following the removal of the gall-bladder.

We were unable to elicit a gall-bladder history from either the patient or her husband, and believe that the nausea and vomiting were due to the intestinal obstruction. Of course, we could not say whether or not she had had gall-stones that had passed. Our interpretation of the features in this condition of the gall-bladder was that from some cause, the cystic duct had been obstructed and this had eventually destroyed the mucous membrane, leaving a stricture, with the result that the gall-bladder could no longer perform its functions, and the condition was the same as though the gall-bladder had been removed. Marked dilatation of the common duct had taken place, which, as is shown in the drawings, was probably secondary to occlusion of the gall-bladder from the biliary tract.

CASE (A-92,877) T. H., a business man, 64 years of age, was examined Sept. 29, 1913. Family history negative. This patient had had gastric symptoms off and on for 20 years, and recently he had had typical gall-bladder attacks. On Oct. 30, 1913, cholecystectomy was done. Four stones as large as pullets' eggs and three small ones were removed from the gall-bladder and from a pocket in the liver into which they had perforated. The adherent omentum in an umbilical hernia was also resected and one piece was sutured into the sac to plug the opening. Recovery was uneventful.

The patient returned, Dec. 16, 1915, giving a history of recent symptoms typical of duodenal ulcer. December 29, 1915, posterior gastro-enterostomy was performed. It was found that an ulcer of the duodenum had caused obstruction of the pylorus; the stomach was dilated, and there were adhesions about the pyloric end. The patient did well for six days, had no trouble with his stomach, took food freely, and was able to sit up in a chair. He had had bronchitis for several years, but apparently it was not troublesome. However, bronchial pneumonia developed rather suddenly and he died in seventy-two hours after the onset.

Autopsy Jan. 7, 1916, showed a well-healed gastro-enterostomy, no leakage; the orifice admitted two fingers. Gall ducts were patent. The common duct was dilated to 2.2 cm. in diameter; the cystic duct was not distended. Just proximal to the papilla of Vater, but apparently having no communication with it, there was a small diverticulum leading from the duodenum. The diverticulum was lined with duodenal mucous membrane, about 3 cm. deep and 1.5 cm. in diameter. The pancreas was rather firm and nodular to the touch and showed chronic pancreatitis (Fig. 7).

This case gave us an opportunity to observe the condition of the gall ducts two years after cholecystostomy, which really amounted to a cholecystectomy, as the gall-bladder was practically destroyed at the time of the drainage operation. The gall-bladder was constricted and held down by a mass of adhesions and evidently had not been functioning for a long time; the ducts were markedly dilated.

The two cases I have just cited are the only ones I could find in our autopsy records in which the gall-bladder had been either destroyed

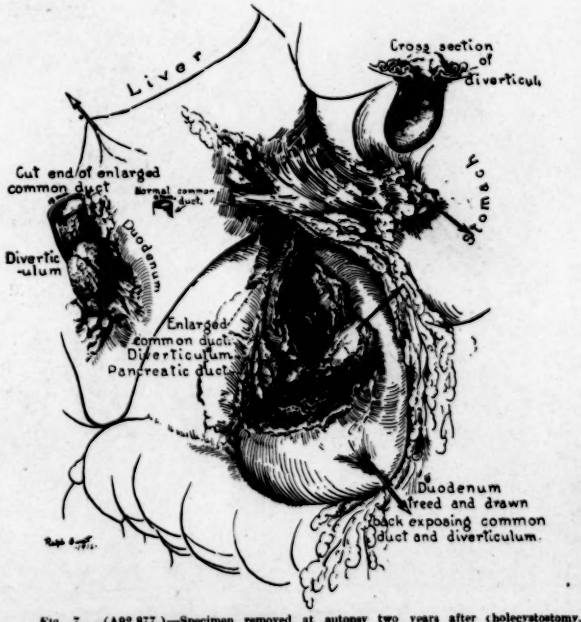

FIG. 7. (A92,877.)—Specimen removed at autopsy two years after cholecystostomy. Gall-bladder entirely destroyed. Common duct markedly dilated, measuring 15 mm. Scar tissue fills space previously occupied by gall-bladder.

FIG. 8.—Dotted line, old incision. Black line, new incision.

FIG. 9.—External aponeurosis of rectus muscle incised. Rectus muscle fibers separated by blunt dissection. Black line, aponeurosis incision. Dotted line, muscle incision.

or removed some time previous to the autopsy. Although the gall-bladder was not removed in either of these cases, practically that condition obtained, and the changes which took place were those that might be expected following cholecystectomy.

TECHNIC.

Cholecystectomy must be considered the operation of choice if we assume that the infection is actually in the tissues of the gall-bladder, and if we know that the removal of this organ relieves pancreatitis, whether produced through the regional lymphatics or the common and pancreatic ducts. A much larger percentage of patients have recurrences following drainage, and this would seem to be an argument in favor of cholecystectomy. C. H. Mayo's[13] recent report shows that the mortality following the two operations is about the same. The gall-bladder can be removed without any untoward results to the patient, and the only changes following its extirpation are those in the biliary ducts. The drainage operation will have a place, at least until it has been shown that the infection is always systemic and into the tissues themselves. It seems

FIG. 10.—Clamps on the suspensory ligament. The ligament can be cut between clamps for better exposure.

to me that cholecystostomy would be the operation preferred in any case in which the infection seemed to be in the bile only and in which the tissues of the gall-bladder were free.

There are a few points in the technic of gall-bladder operations which I think should be emphasized. Good exposure is most essential, and this does not depend nearly so much on the size of the incision as on its location (Fig. 8). Formerly it was customary to make the incision over the fundus of the gall-bladder, but the fundus is nearly always movable and the fixed point is at its juncture with the cystic duct. The best exposure of the gall-bladder, cystic duct and common duct is obtained by making the incision in the abdominal wall at a point just over the ducts. This will be near the midline beginning directly beneath the ribs to the right of the ensiform. The best incision is the one made in a straight line through the superficial tissues and deep fascia, extending obliquely from the ensiform to a point about two inches to the right of the umbilicus. This is practically the Bevan incision. The next step is to reflect the fascia and separate the right rectus muscle fibres (Fig. 9). If there is any difficulty at all in obtaining the exposure after the peritoneum is opened, it is best to cut the suspensory ligament of the liver. This is not always necessary, but often a great help. After the ligament has been cut, the edge of the liver turns back much more easily and the end of the ligament attached to the liver can be used as a tractor without traumatizing the tissue of the liver (Fig. 10). According to most anatomists, this ligament does not have the function of suspension. It can always be sutured or the ends tied together after the deep part of the operation is completed. In doing a cholecystectomy it is usually best to begin with the dissection of the cystic duct; with some thick-walled gall-bladders, it may be better to begin at the fundus and dissect downward (Figs. 11 and 12). Beginning at the cystic duct it is best to dissect the lower end of the gall-bladder and also the cystic duct away from the liver and common duct before clamping or tying; then the cystic duct and cystic artery can be clamped separately or at one time. In this way the control of these structures is much more accurate and there is no danger of traumatizing the common or hepatic duct.

From the foregoing the following conclusions seem indicated:

1. The systemic circulation is one of the most important, if not the most important, ave-

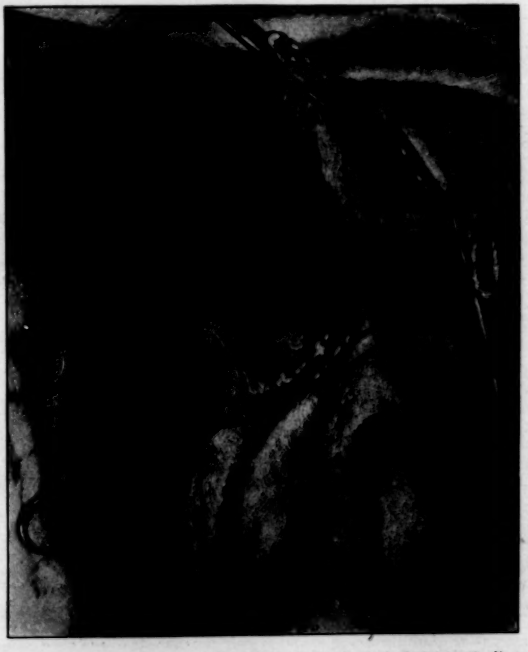

Fig. 11.—Suspensory ligament divided. Dissection of the cystic duct from the liver, common and hepatic ducts, the gall-bladder being held with the fingers.

nue through which infection reaches the gall-bladder.

2. With the knowledge now at our command we were unable to recognize all cases of cholecystitis, even with the abdomen open.

3. The clinical history is a most important factor in determining the existence of cholecystitis. The significance of the enlargement of the regional lymphatics and the condition of the wall of the gall-bladder is already recognized.

4. Chronic cholecystitis without stones does exist as a definite pathologic lesion, and produces symptoms that will be relieved by the removal of the gall-bladder. However, chronic cholecystitis may exist to a slight degree without producing definite symptoms.

5. The only change in the surrounding structures, produced by the removal of the gall-bladder, is the dilatation of the common and hepatic ducts, and possibly the stump of the cystic duct. Dilatation is apt to be most marked in the hepatic duct; it is least at the intestinal end of the duct. Dilatation seems to stop where the duct passes through the muscle of the intestinal wall.

6. Eventually this dilatation, with increased pressure, overcomes the action of the sphincter at the intestinal end of the duct, and the bile passes through into the duodenum with very little resistance. We believe that this mechanism explains why the removal of the gall-bladder cures symptoms produced by inflammation of the pancreas, assuming that the inflammation in the pancreas is caused by bile from the common duct entering the pancreatic ducts.

7. The changes in the ducts which follow cholecystectomy indicate that the gall-bladder has a definite function.

REFERENCES.

[1] Archibald, E.: A New Factor in the Causation of Pancreatitis. Paper read at the 17th International Congress of Medicine, London, 1913.

[2] Deaver, J. B., and Ashhurst, A. P. C.: Surgery of the Upper Abdomen. Philadelphia, B. Blakiston's Son & Co., 1913, ii, 2.

[3] Rosenow, E. C.: Elective Localization of Streptococci. Jour. Amer. Med. Asso., 1915, lxv, 1687-91.

FIG. 12.—A. Cystic duct severed between clamps. Gall-bladder turned back. One clamp under the cut-off end of the gall-bladder catches any little vessels not included in the clamp on the cystic duct. B. Gall-bladder dissected out in the usual way and fissure in the liver sutured.

[6] Mayo, C. H.: Papillomata of the Gall-Bladder. Ann. Surg., 1915, lxii, 193-6.
[7] Mayo, W. J., and Mayo, C. H.: Surgery of the Liver, the Gall-Bladder and the Biliary Ducts. Keen's Surgery, 1908, iii, 1006.
[8] MacCarty, W. C.: Pathology of the Gall-Bladder and Some Associated Lesions. Ann. Surg., 1910, li, 651-69.
[9] Flexner, S.: The Constituent of the Bile Causing Pancreatitis and the Effect of Colloids Upon Its Action. Jour. Exper. Med., 1906, xiii, 167-77.
[10] Oddi, R.: Di una speciale disposizione di sfintere allo sbocco del coledoco. Perugia, 1887. Monitore zoologico italiano, 1894, v. Quoted by Luciani, L.: Human Physiology, 1913, ii, 214-17.
[11] Opie, E. L.: The Etiology of Acute Haemorrhagic Pancreatitis. Johns Hopkins Hospital Bull., 1901, xii, 182-8. Diseases of the Pancreas. Philadelphia, Lippincott, 1903, 121.
[12] Mayo, W. J.: Cholecystitis Without Stones or Jaundice in its Relation to Chronic Pancreatitis. Amer. Jour. Med. Sci., 1914, cxlvii, 469-74.
[13] Rost, F.: Die funktionelle Bedeutung der Gallenblase. Experimentelle und anatomische Untersuchungen nach Cholecystektomie. Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 710-770.
[14] Deaver, J. B., and Pfeiffer, D. B.: Chronic Pancreatitis. Ann. Surg., 1914, lix, 841-47.
[15] Mayo, C. H.: Cholecystostomy versus Cholecystectomy. Trans. South Surg. and Gynec. Asso., 1915.

NEPHROPEXY.*

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From a study of the anatomy and physiology of the kidney and of its relations and means of support, we must conclude that the organ is never a fixture. Mobility without symptoms may exist to marked degree, to be only accidentally discovered. The only primary supports for the kidney are intra-abdominal pressure, inclination of the spine so as to form a modified niche for the organ and maintained by correct posture and the attachments of the posterior kidney surface to the aponeurotic covering of the quadratus lumborum muscle. In operating for pathologically mobile kidney it is, therefore, unnecessary and also unwise to attempt a fixation or a perfect replacement of the organ in its exact anatomical position, an approach to within one inch being sufficient, safe and so much more easily accomplished as to render the accurate approximation of the decapsulated posterior surface to the lumbar fascia much more certain in each case. A kidney one inch lower than its supposedly normal level is still within its niche, and by not attempting to place it higher all danger of injury to the diaphragm is avoided.

Most commonly the ptosed kidney is a part of general enteroptosis and may be, as held by some authorities, the first step in development of that difficult and complicated condition. It is, however, a fact that many patients coming to operation for entirely dissociated conditions are found to have kidneys with great degrees of mobility without symptoms referable and lacking signs of general ptosis. From this fact it seems reasonable that an occasional uncomplicated pathologically floating kidney will be identified, and such has been our experience. Perfect end-results in a large number of nephropexies will bear a closer relation to the care and judgment of the surgeon than to any special operative technic, provided the functional activity of the kidney is not impaired. As a rule, the development of symptoms from mobile kidney is slow, accompanied by relaxation of abdominal wall and perineum, faulty posture and lowered intra-abdominal pressure. Before surgical relief is undertaken there have frequently developed other abdominal disorders, either distinct from or secondary to the ptosis. Hence the need for discrimination before operation is advised, and for thoroughness once one enters upon that course. The wandering kidney must be considered innocent until proven guilty by a process of elimination. When proven guilty the correction of posture and increase of intra-abdominal pressure may give relief. A thin subject may also gain much help from a new deposit of fat, though in my experience this relief has been but transitory. If operation is undertaken it must result in readjustment of all faulty supports and elimination of all complicating conditions or it will not be completely satisfactory. If these conditions obtain the results will be satisfactory. So far as the nephropexy alone and the relief of symptoms rightly laid to the wandering kidney are concerned, the operative mortality and resulting percentages of cures will rank with those for repair of inguinal hernia, the two conditions offering points of analogy. The surgical problem in each is one of mechanics, the restoration of normal anatomy without interference with the physiology of the organs or tissues involved. In hernial repair the normal relations may be and generally are to some degree changed without any resulting functional disturbance, the analogous step in nephropexy being the more or less complete decapsulation of the kidney. The final strength of the hernial repair is dependent upon scar tissue forming between edges of replaced, transplanted or reconstructed tissue, while the only permanently dependable kidney support, other than intra-abdominal pressure and posture, which can be induced surgically is of the same nature, the scar formed between the posterior decapsulated surface of the kidney and the aponeurosis over the quadratus; and the strength of this agglutination of surfaces will depend upon the accuracy with which they are brought into contact, just as that of the hernial scar depends. A nephropexy which removes the wandering tendency of the kidney and results in its permanent residence at the site chosen for it, but at the expense of all or a generous portion of its functional activity, is not a success any more than the repair of an inguinal hernia which holds securely but results in atrophy of the testicle.

Moore and Corbett demonstrated in 1910 that serious damage always follows puncture, incision or constriction of the kidney, and that the relative damage done is proportionate in the order named. Constriction by a suture not only destroys the portion of substance included in it, but a wide zone on either side. Three

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encircling sutures are sufficient to practically destroy an entire kidney, the organ so treated resembling one pathologically contracted from other causes. Decapsulation of a sound kidney is, however, not followed by permanent functional change. This is attested by numerous investigations, both clinical and experimental. Lapeyre found that 62% of his dogs showed albumin, sugar, or both, for 24 hours after decapsulation, but that it never persisted after that time, and that no other change was demonstrable. He decapsulated one kidney and did a bilateral ureterostomy and tested comparative permeability with fluorescine and potassium ferro-cyanide, also with intra-venous injections of iso- and hypertonic solutions of sodium chloride, urea and glucose. No appreciable difference ever appeared between the decapsulated and sound kidneys.

The squamous epithelium lining the kidney pelvis is very prone to overgrowth under chronic irritation. Moore mentions a case of pyelotomy, following which the proliferation resembled a new growth. Permanent renal fistulae are lined principally by the proliferation of this squamous epithelium. Such tissue must be avoided, if possible, in any nephropexy. It is evident that we are at liberty to make use of the fibrous capsule either as the material for permanent supports or as a temporary anchorage, but that any wounding or constriction of kidney substance must be avoided. No doubt a kidney may be fastened into position by numerous transfixions and lacings, especially of non-absorbable material, so that it might never again become a wanderer; and perhaps many a kidney has been so treated. If no infection followed, and the other kidney proved equal to the work of both, the symptoms being relieved, such a case might be classed as a perfect result until someone got a look at that kidney. The operative mortality of nephrectomy on a sound kidney would be low, and that of thus destroying a kidney *in situ*, which is what such an operation amounts to, still lower, and in that respect only would the pexy be better than removal; while nephrectomy would at least remove all danger of further trouble. In other words, the employment of any technic which involves transfixion or compression of any considerable amount of kidney substance in order to immobilize the organ is a frank removal of that organ so far as functional activity goes, is an admission of inability to cure the wanderer other than by destruction, and is little, if any, to be preferred to an elective nephrectomy. The developing sentiment in favor of reliance upon the capsule as either permanent support or as anchorage during the period necessary for scar formation is pictured in the various methods recently found in the literature.

Ach delivers the kidney through the loin and makes two longitudinal incisions in the capsule, running from pole to pole, one on the anterior and one on the posterior surface. Freeing the capsule between the incisions leaves a wide ribbon attached at each end. A strip of fascia lata is removed, and one end passed under the ribbon of capsule. The kidney is then replaced and the free ends of fascia stitched to the muscular wound margins. This suspends the kidney by its capsule and doubtless later by scar formation to some degree.

Vogel describes a somewhat similar method. He forms a ribbon of capsule similar to Ach's, but cuts it off at the lower end to make a free capsular band attached only at the upper pole. He then resects the 12th rib just outside the transverse process to increase its mobility, and passes the band of kidney capsule up under and around the rib, the end being finally brought down and sutured to the kidney. This leaves the organ suspended from the rib, and again is probably reinforced by later scar formation. One objection to this method is the danger of pleural injury. Mayo has called attention to this danger and Firth mentions a case in which it occurred.

Firth recommends the Billington method of nephropexy. Billington's incision begins high, over the eleventh rib, and he also passes a sling of capsule about the twelfth rib, but without resecting it. The kidney being delivered is carefully freed of fat and any accessory vessels, and a facial flap mobilized from the upper half of the organ, two-thirds of its width from the posterior and one-third from the anterior surface. A curved clamp is forced downward from above and close to the last rib, behind the rib and into the upper angle of the wound, the capsular flap seized and drawn around the rib, to be sutured back to the kidney. Two supporting sutures are also put into the kidney substance in its lower half, to be brought out through all muscular layers and skin to tie over gauze rolls. Like the method of Ach, this presents serious danger to the pleura, and the two supporting sutures, to be strong, must grasp and destroy considerable renal tissue. The method of forming the fascial flap has, however, one point of superiority over that of Ach as well as that of Vogel, in that it is so taken as to tend to bring the normal posterior surface against the quadratus, instead of the convexity, which is obviously not physiological. If Ach and Vogel simply made their flaps on the posterior surface instead of the convexity, this objection would be removed.

Luzoir favors Marion's modification of the Albarran method, which seems similar to the Billington, without the two supporting sutures. The flaps are fastened as high as possible, and the capsule over the lower pole is left to act as a hammock.

Bissell calls especial attention to the incision and delivery of the kidney without injury to nerves or vessels. He frees a capsular flap from the posterior surface, leaving it attached only along the convexity. This flap is sutured to

the muscular edge of the wound after replacing the kidney, but first he passes two stay sutures entirely around the kidney, one above and one below the pedicle, using silkworm gut or wire. The stays are brought out through all layers and skin, to tie over a bolster of gauze. It seems doubtful how much functional activity could be expected from this kidney, but it would probably remain in place permanently.

Kelley has used one method in several hundred cases. He does not free the capsule, and sometimes does not even deliver the kidney. He passes three sustaining sutures into the kidney, two of them into the upper half on the posterior surface. Each suture is so placed as to encircle an area of capsule and as little kidney substance as possible. When pulled upon, the sutures cause each a dimple in the capsule and hold securely. Kelley relies for permanent support upon organic union, which he says soon forms. He is apparently a strong advocate of nephropexy in properly restricted cases. He sometimes brings the upper suture out above the twelfth rib. The amount of damage to the kidney by this method depends upon how much substance is constricted. Simply because a kidney is abnormally mobile or chronically displaced is by itself no indication for operation. Furthermore, many patients with such a condition and with symptoms referable to it, even lacking other demonstrable cause, had better be treated expectantly by such measures as may tend to correction of faulty posture. Such patients, if thin, may improve with a gain in weight, the new deposit of perirenal fat acting as a bolster. One of our cases was so relieved, only to lose her fat two years later, with return of symptoms. Most external supports and cushions are failures, but may be given a trial, the safest course being one of conservatism. Uncomplicated pathologically floating kidney is rare. The writer's cases have all shown some degree of general ptosis save three. One of these was complicated by a mass of dense adhesions at the site of a previous operation on the left tube. The other two were apparently uncomplicated at the time of operation, but one of them had been operated upon eight months previously for a large ventral hernia. The last was the only simple case. In this instance the presence of abundant perirenal fat had not been possessed of the usual virtue. The appendix had been removed elsewhere six months previously but without relief. Palpation of the kidney was unsatisfactory, and the abdomen was first opened for exploration. Nothing presenting save the very mobile kidney, the wound was closed and pexy done through the loin. Complete relief followed immediately. In this case Kelley's method of identification of the pain by the patient on ureteral catheterization and distention of kidney pelvis might have obviated the laparotomy.

There can be little doubt that nephropexy as a curative agent in many obscure cases has been overworked. Failures followed, and the blame was often put on the operation when it belonged to the operator. Initial enthusiasm over something new or endowed with new virtues by its sponsor often leads to application in conditions for which it is not indicated or by those unfitted by training and experience.

The strength of the organic union between two denuded surfaces depends upon the accuracy with which they are approximated, without undue pressure to interfere with circulation and without infection. The posterior decapsulated surface of the kidney if accurately approximated to the aponeurotic covering over the quadratus muscle will unite securely to it. This union is as reliable for strength as that of a median laparotomy scar. To bring about this union, eliminate complicating conditions and remedy the primary cause make up the treatment of floating kidney.

Our preference is for an incision similar to that described by Kelley. It begins at the lower border of the last rib over the depression at the insertion of the quadratus lumborum and extends downward and forward to a point about opposite the anterior superior iliac spine. In thin subjects a shorter incision may suffice. The insertion of the latissimus is exposed and separated from the rib to expose the lumbar triangle. The ilio-inguinal and hypogastric nerves are identified, usually under the edge of the quadratus but sometimes farther forward, and avoided. The fibres of the internal oblique are separated from those of the quadratus by blunt dissection and retraction to expose the lumbar fascia. This is incised and perirenal fat exposed. The kidney is freed and delivered and held on a pair of gauze strips. The fibrous capsule is now incised from one pole to the other on a line curving along the convexity, but slightly on the posterior side. The capsule is entirely freed from the posterior surface and on the other side of the line of incision over the convexity. The posterior flap of capsule is now turned back and three or four sutures passed through it, each by an encircling stitch so as to firmly grasp a generous amount of capsule. This stitch is similar to that used by Kelley but in this case includes no kidney substance, as shown in illustration. When these sutures are drawn upon, the capsular flap is rolled backward to leave the whole posterior kidney surface bare. Three or four sutures are similarly passed in the edge of loosened capsule over the convexity. The kidney is now replaced and the sutures brought out through muscle and fascia to tie on each side of the wound. The uppermost sutures are brought out close to the rib, but we have never found it advisable to encircle the rib. When all are made firm and tied the posterior surface of the kidney is accurately approximated to the aponeurotic covering of the quadratus, and the area of agglutination upon which we may rely for support must average at least four square inches. If

the two surfaces are put into only partial contact or clot allowed to intervene, the resulting scar will be correspondingly weak. The muscular edges of the wound come easily together and are secured with catgut, the fatty layer and skin being closed without drainage. The wound should be kept dry throughout operation, as in repair of inguinal hernia, and the nerves must be avoided so as not to be injured or included in the supporting sutures.

By nephropexy we attempt to relieve not a disease process or new growth, but a purely mechanical defect. We must accomplish this without destruction of organ or function, and the closer we adhere to principles of physiology in the work, the nearer will we approach the point where the operation is put upon a basis of generally assured success. If we are unable to effect a cure without ruining the kidney functionally we had better leave it alone or remove it frankly. The sling, basket and hammock operations which constrict the kidney are opposed to fundamental principles of physiology. One is at liberty to decapsulate wholly or in part without wounding the kidney in cortex or pelvis. The free capsule offers material for manufacture of permanent supports or for anchorage sutures. Reliance is placed upon scar to hold after repair in other parts, and seems an adequate support here, provided the cause of the ptosis is removed previously or contemporaneously; and provided the kidney is placed in its normal position with the posterior surface, not the convexity, against the quadratus muscle. If the cause is not discovered and removed recurrence may be expected.

Ten cases have been treated according to this technic by the writer.*

AUTHOR'S CASES.

CASE 1. Laparotomy, lysis of adhesions, nephropexy. Cholecystectomy four years later, Dr. C. S. White, Washington, D. C. "Kidney firmly anchored."

CASE 2. Nephropexy. Large ventral hernia repaired eight months previously. Died from causes other than kidney or operation.

CASE 3. Perineorrhaphy, colporrhaphy, ventro-suspension, repair of large ventral hernia, nephropexy. Reported in person, well, kidney in position.

CASE 4. Laparotomy, exploratory, nephropexy. Appendectomy six months previously without relief. Reported in person. Well. Kidney in position.

CASE 5. Perineorrhaphy, double salpingo-oöphorectomy, ventro-suspension, appendectomy, nephropexy. Reported by letter. Well.

CASE 6. Perineorrhaphy, ventro-suspension, nephropexy. Reported in person. Still some disability, but much improved. Kidney in position.

CASE 7. Unilateral salpingo-oöphorectomy, ventro-suspension, nephropexy. Reported by letter. Well.

* Since this paper was written one other case has been added.

CASE 8. Appendectomy, plication of abdominal fascia to approximate recti muscles, nephropexy. Reported in person. Well. Kidney in position.

CASE 9. Perineorrhaphy, appendectomy, ventro-suspension, nephropexy. Reported in person. Generally well. Dysmenorrhea. Kidney in position.

CASE 10. Appendectomy, ventro-suspension, nephropexy. Reported by letter, "Much better than before operation, but not strong."

CASE 11. Not included in main list. Curettage for uterine polypi. Cystoscopy, appendectomy, nephropexy. Reported in person. Well.

All were females. Eight were married. The youngest was 25 and the oldest 42 years. Each of the married women had at least one child. One had two children. One had three and one had six. Two cases have gone through uncomplicated pregnancies since operation. In no case was there evidence of kidney embarrassment, either early or late. There was no case of prolonged convalescence, the average stay in hospital being seventeen days. All wounds healed by first intention, though one patient had a superficial infection in her abdominal wound made at the same sitting. There was no operation mortality. Of the ten, one has died from causes entirely dissociated from the operation and the others are well. Nine have reported within

two months, five of them in person. These five show kidney in place and all nine report freedom from symptoms present before operation. Length of time since operation of cases included in this series varies from ten months to four and one-half years. In only one case was nephropexy done without abdominal exploration and more or less extensive work there. This case had a large ventral hernia repaired eight months before the nephropexy. The fourth case in the series was the only uncomplicated one. Abdominal exploration revealed nothing but the extremely mobile kidney. The appendix had been removed elsewhere six months previously without relief. Case 1 has recently had a cholecystectomy in another city, the operator reporting to me by letter that the kidney was found securely anchored at time of his operation, over four years after the nephropexy.

SUMMARY.

A mechanical problem is best solved under good mechanical principles.

Success is dependent upon the degree to which normal anatomical and physiological conditions are approached.

The kidney may not be wounded, fixed or constricted with impunity.

Decapsulation, either partial or complete, does not impair kidney function.

The most rational method of securing the kidney in position after it has become a wanderer to such a degree as to demand operation, is that of removing the cause and aiding in the reconstruction of natural support.

Any permanent artificial support is dangerous if not completely destructive to the kidney's functional activity.

The rolled-up and transfixed capsular flap offers a perfectly adequate hold for one end of the anchorage, and the muscular and fascial layers of the loin the same for the other end without sutures which emerge through the skin.

If the anatomical relations of the kidney cannot be permanently readjusted without destruction of its functional activity it deserves to be either let alone or removed.

BIBLIOGRAPHY.

Cullen and Derge: Silver Wire in Opening Kidney, Surg., Gyn. and Obstet., October, 1911.

Moore and Corbett: Damage to Kidney by Operation, Ann. Surg., December, 1910.

Vogel: Operation for Wandering Kidney, Zentralblatt f. Chir., 1912, Vol. xxxiv, No. 41.

Bissell: Suspension of Kidney, Stereo Clinic, 1915.

Kelley: Suspension of Kidney, Stereo Clinic, 1915.

Moore and Corbett: Suturing Kidney, Ann. Surg., 1913, lvii, 860.

Warischtescheff: Decapsulation of Kidney, Chir. Arch., Weljaminova, 1913.

Firth: Nephropexy, Bristol Med.-Chir. Jour., 1913, xxxi, 220.

Mayo, W. J.: Accidental Injuries in Removal of Kidney, Jour. Am. Med. Asso., 1914, lxii, 343.

Luzoir: Albarran-Marion Method of Nephropexy, Thèse de Doctour, Paris, December, 1913.

Cabot, H., and Brown, L. T.: Treatment of Movable Kidney by Posture, BOSTON MED. AND SURG. JOURN., 1914, clxxi, 369.

Lockwood: Surgical Treatment of Nephroptosis, Brit. Med. Jour., 1914, II, 565.

Pardhy: Nephroptosis, Practitioner, London, 1914, xcii, 527.

Billington: Results of Nephropexy, Brit. Med. Jour., 1914, I, 856.

Lapeyre: Renal Function After Decapsulation, Jour. de physiol. et de path. gen., 1913, xv, 241.

Ach: Operative Treatment of Floating Kidney, Beitrag z. klin. Chir., 1914, xciii, 262.

Thompson, G. S.: Operation for Movable Kidney, Brit. Med. Jour., 1914, II, 1096.

Kelley and Lewis: Hydronephrosis Due to Movable Kidney, Surg., Gyn. and Obstet., 1914, xix, 601.

Bartlett: Surgical Treatment of Floating Kidney, Jour. Mo. St. L. Med. Asso., 1915, xii, 152.

Simon: Movable Kidney, Zeitschr. f. Urol., 1914, viii, 609.

White, C. S.: Personal Communication, 1915.

ACUTE PERFORATION OF ULCERS OF THE STOMACH AND DUODENUM, WITH CASE REPORTS.

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ACUTE perforation of the stomach or duodenum unrelieved by operation, is one of the greatest disasters that can occur within the abdomen. The termination is usually death in a few days. On the other hand, the results of early operation are among the most gratifying in surgery. Acute perforation of ulcers is not an uncommon accident, and every physician doing general practice should be prepared to recognize it immediately, as the life of the patient depends on early diagnosis. There can be no doubt that this trouble is frequently overlooked until it is too late—until the establishment of a lethal peritonitis. It is a great misfortune to diagnose acute perforation, with gastric and duodenal contents constantly pouring into the general peritoneal cavity, as appendicitis and treat it expectantly according to the Ochsner method. Nothing but disaster can follow such delay.

Last June, Walker, in a paper read before the surgical section of the Massachusetts Medical Society, reviewed the Boston City Hospital surgical records for a period of ten years—1905 to 1915. During this time there were 78 cases of acute perforation of the stomach and duodenum operated upon by 17 surgeons. There were 57 recoveries and 21 deaths. Seventeen patients were operated upon within the first 4 hours and all recovered. Of those operated upon from 5 to 12 hours after perforation, there was a mortality of 17.9%; of those operated upon 13 to 24 hours, 47.6%; of those operated upon 25 to 48 hours, 66.2%. This report very well emphasizes the importance of early diagnosis and surgical treatment.

During the past few years I have had the opportunity to study ten cases of acute perforation of the stomach and duodenum. Six of these were my own cases and four were seen with other physicians. I wish to report briefly my six cases because I had an opportunity to operate upon these patients and watch their progress after operation. These cases were operated on consecutively, with no death.

CASE 1. Mr. M., 35 years, always well—no stomach discomfort of any kind, was seized suddenly after dinner with intense pain in pit of stomach. Nauseated but did not vomit. Unable to continue work. A physician was called to factory (out of town) and diagnosed the trouble appendicitis. Was removed to a relative's house and later to his home in Salem, where he was seen by the writer.

Patient was lying on his back with legs drawn up. Abdomen was rigid and tender, especially over right lower quadrant. Liver dullness normal. Abdominal pain was intense. There was some doubt about diagnosis because of excessive tenderness and rigidity over McBurney's point and because of complete absence of previous stomach trouble, although perforation of a peptic ulcer was seriously considered. Operation advised. Entered hospital June 11, 1912. Temperature 100°, pulse 106.

Operation. Twenty hours after onset of symptoms. A low rectus incision was made. Abdomen was filled with thick bile-stained fluid containing food particles. Appendix removed, a high rectus incision was then made and a perforation of stomach, about one inch from pylorus, was found, with gastric contents pouring through. The perforation was closed with two layers of chromic gut. Three drains were inserted, one to ulcer site, one to kidney pouch and one in lower rectus incision. Convalescence uneventful. Discharged from hospital eighteen days after operation and has since been perfectly well.

CASE 2. Mr. D., age 26 years. Admitted to hospital Jan. 27, 1914. Temperature 99.6°, pulse 96. Dyspepsia for two years. Two days ago was seized with severe pain in epigastrium. Vomited once, nauseated most of the time. Pain has been getting worse. Entire abdomen rigid and tender—most marked in region of gall-bladder. Liver dullness normal.

Operation. High rectus incision 5 inches long. Considerable amount of bile-stained fluid within abdomen. An indurated ulcer which had perforated was discovered in upper part of duodenum. Perforation closed as well as possible and appendix was removed. Drains, one to the ulcer and one to the kidney pouch. Convalescence somewhat stormy. Discharged March 4.

Later History. Remained well for about four months, then there was a return of stomach symptoms. Various remedies were employed by different physicians, which gave only temporary relief. He returned to me for surgical treatment which had been previously advised.

Re-admitted to hospital Dec. 29, 1915.

Operation. Median epigastric incision. Numerous adhesions about stomach and duodenum found. Posterior gastro-enterostomy, no loop, with suture was performed. Convalescence uneventful. Left hospital eleven days after operation. Has since been well.

CASE 3. Mr. K., 33 years. Dyspepsia for five months. Epigastric discomfort, relieved for a time by ingestion of food. Seized suddenly about one hour after breakfast with intense pain in upper abdomen. Seen by me about two hours after onset of symptoms. Patient appeared to be suffering very great pain. Examination showed some tenderness and rigidity over whole abdomen, especially over right side. There was no tympany over liver. Pain became progressively worse. Admitted to hospital June 14, 1914.

Operation. Six hours after onset of symptoms. Right rectus incision. When the peritoneum was opened some air escaped, followed by viscid bile-stained fluid. A chronic ulcer of duodenum near pylorus was found, perforated. The free fluid within the abdomen was carefully removed, the appendix excised, three drains were inserted and abdomen closed in the usual manner. Convalescence was stormy. Discharged to his home June 25 because of fire at hospital.

Post-operative History. After returning home, continued to improve, and after three months returned to work. Stomach symptoms returned and these were only temporarily relieved by medical treatment.

Re-admitted to hospital Nov. 9, 1915. A five-inch median epigastric incision was made; many adhesions were found about liver and gall-bladder; pyloric stenosis present. The usual posterior gastro-enterostomy was done. Convalescence uneventful; eating solid food on the fifth day. Discharged well, twelve days following operation. Has since been well. Three months after operation he had gained 21 pounds.

CASE 4. Mr. S., 20 years. Admitted to hospital June 21, 1914. Always well, no stomach trouble. Twenty-four hours before admittance was seized with intense pain in epigastrium. A physician was called who diagnosed the trouble appendicitis. Examination at hospital showed general abdominal tenderness. Tympany over liver. Pain severe. Expression anxious.

Operation. An ulcer about size of dime with a good-sized perforation in centre was discovered in first portion of duodenum. Abdomen filled with gastric and duodenal contents. Perforation closed in usual manner. Three drains were inserted as in the other cases. Appendix removed. Discharged to Peabody Hospital four days later because of hospital fire.

Post-operative History. After leaving hospital was well for about two months, then began to complain of sour stomach and eructations of gas, which symptoms troubled him when last seen, five months ago. Otherwise well.

CASE 5. Mr. A., 39 years. Entered hospital Dec. 9, 1914. Temperature 96°, pulse 100. Mother died of perforation of stomach, one year previous. Dyspepsia for two years.

Immediately after a heavy pork dinner, was seized with intense pain in upper abdomen while at his work in Wakefield. Taken to Salem Hospital.

Examination at the hospital showed board-like rigidity of abdominal muscles, especially marked over right side, above and below. Abdomen retracted, liver dullness normal, expression anxious; patient seemed to realize that something serious had happened.

Operation. Five hours after onset of symptoms. Abdomen filled with thick bile-stained fluid containing food particles. A hole in the center of a large indurated duodenal ulcer near pylorus was discovered. Perforation closed in the usual manner. Appendix removed. Three drains inserted, the lowest one through low right rectus stab wound. Convalescence stormy. Lavage of stomach had to be

resorted to frequently. Discharged Jan. 9, 1915, recovered.

Post-operative History. Since operation the stomach symptoms have been about the same as they were previous to the perforation. Undoubtedly, gastro-enterostomy is indicated.

Case 6. Mr. S., 25 years. Dyspepsia for three years. Stomach distress much worse the last few months. Was seized with severe pain in abdomen while at work. Unable to continue work. Removed to his home and there seen by writer three hours after initial pain. Abdomen retracted and markedly rigid and tender throughout, especially on right side. Liver dullness normal. Nausea but no vomiting. Facies anxious. Abdominal distress great.

Admitted to hospital Nov. 27, 1915. Temperature 97°, pulse 100. Operation five hours after onset of symptoms. Some free fluid in abdomen, peritoneum everywhere congested. An ulcer discovered in upper portion of duodenum with tiny perforation in the center, discharging duodenal contents. Perforation closed. Appendix removed. A non-loop posterior gastro-enterostomy with suture was then performed. One small drain inserted to ulcer. Discharged fifteen days after operation with small sinus discharging slightly, which healed in about one week.

Post-operative History. Since operation has gained 15 pounds in weight. There has been no return of stomach symptoms which troubled him previous to operation.

Early diagnosis:—In connection with the subject of acute perforation, the most important consideration is diagnosis, as this always implies the need of surgical intervention. There seems to be considerable difference of opinion regarding what constitutes the most dependable signs and symptoms which will aid us in making an early diagnosis. Mayo-Robson, in discussing the symptoms of acute perforation of the stomach in Keen's Surgery, says: "A sudden sharp abdominal pain, accompanied by shock, is usually an initial symptom in perforation. Almost immediately the expression of the face changes to one of anxiety and great distress; the extremities become cold and clammy and the face blanched; the respirations are usually shallow and quick, and the pulse rapid and almost imperceptible at the wrist.

"On examining the abdomen, the recti are rigid and the whole abdomen feels like a board and does not move during respiration. At first the abdomen is retracted but later it becomes distended with gas and fluid, and as a rule a thrill can be obtained in the flanks and later from side to side. Liver dulness is generally absent."

There can be no doubt that these signs and symptoms exist in certain cases of perforation. On the other hand, if we wait for the appearance of rapid, thready pulse, cold clammy skin, fluid wave and tympany over liver, before establishing the diagnosis, I am sure that many cases will be overlooked—and lost. My observations, relative to diagnosis, are based on ten cases; the six reported and four others that I had an opportunity to examine but not treat. All complained of sudden, severe pain in the epigastrium. This pain was of the superlative type, perhaps not so bad as that seen in acute pancreatitis, but worse than that observed in the ordinary appendix case. Eighty per cent. of patients gave a history of previous stomach trouble of greater or less degree; 20% had none whatever.

All the cases gave evidence of general abdominal tenderness and muscular rigidity early. In this connection I believe it is well to use the expression *first hour*, general tenderness and rigidity in contradistinction to the later manifestation of these signs in appendicitis, and some other acute abdominal conditions. Nausea and vomiting occur with so many abdominal disorders that they are of little value as diagnostic symptoms. Hematemesis did not occur in any of the ten cases. All the patients suffered great abdominal distress. They looked anxious, apparently realizing that something serious had occurred within the abdomen. Operation in each case was accepted without hesitation. Nine cases occurred in men from 20 to 65 years of age. One was in a young woman of 20 years.

Perforation of duodenal ulcer near pylorus occurred in seven cases. Perforation of gastric ulcer within 1½ inches of pylorus occurred in three cases. In operating on my cases, chromic gut was used to close the perforation, as I disliked to leave silk or linen in an infected field.

Drainage:—One drain was usually inserted to right kidney pouch, one to ulcer, and one through a low right rectus incision—preferring this to the usual suprapubic drain. In relation to this matter, W. S. Smith, in his experiments showed that in perforation of the duodenum the fluid first runs downward in the direction of the right kidney pouch. When this is filled, it descends along the outer side of the ascending colon as far as the brim of the pelvis. The level of the fluid rises until it reaches the pelvic brim, then overflows into the pelvis. This explains why, especially in duodenal perforation, appendicitis is frequently simulated.

Gastro-Enterostomy:—It is often difficult to decide whether it is wise to do a gastro-enterostomy at the time of closure of perforation, as was done in Case 6. This is especially true in duodenal cases with extensive induration. Moynihan was the first to advocate gastro-enterostomy under these conditions. Since then many surgeons, notably Deaver, have advised this procedure as routine treatment. It seems to me that good judgment must be used in this matter by the average surgeon, as a promising case may be rendered hopeless by too much surgery.

CONCLUSIONS.

1. Acute perforation of gastric and duodenal ulcers is not an uncommon accident.

Early operation yields a high percentage of cures. Late operation gives a low percentage of cures, even when performed by a master surgeon.

2. It occurs most frequently in adult males giving a history of stomach trouble. Complete absence of dyspepsia (Case 1) should not preclude the possibility of this diagnosis.

3. The most important diagnostic guide is the occurrence of sudden, severe, epigastric pain immediately followed by signs of spreading peritonitis, which manifests itself by the presence of general tenderness and muscular rigidity.

4. Early or first hour general tenderness and rigidity are very important signs in differentiating acute perforation from appendicitis and many other surgical lesions within the abdomen.

5. The points of maximum tenderness and rigidity are at first, especially in duodenal perforation, on the right side above and below. The rigidity later becomes board-like over the whole abdomen. This is quite distinctive of perforation, although in exceptional cases it may not be present.

6. Tympany over the liver is usually not present. It may occur, however (Case 4). Its absence should not militate against the diagnosis.

7. The abdominal pain as a rule is very severe and patients have an anxious expression, apparently realizing that something serious has occurred within the abdomen. The pulse, however, is often only slightly accelerated in the beginning. This is surprising considering the gravity of this condition.

8. Early operation, implying repair of perforation with or without gastro-enterostomy, should give a high percentage of recoveries.

9. Simple repair is apt to be followed by stomach symptoms, which later require gastro-enterostomy for their relief.

10. In properly selected cases, gastro-enterostomy, performed at the time of closure of perforation, is followed by most gratifying results.

Therapeutic and Preventive Medicine.

POST-OPERATIVE TREATMENT.*

BY HAROLD G. GIDDINGS, M.D., BOSTON.

FOR the attainment of successful end-results in surgery it is essential that patients subjected to operations or to surgical procedures should receive throughout convalescence treatment commensurate and compatible with the particular procedures indulged in. Such treatment cannot logically be separated from the operation itself; indeed, it is a very vital factor in the success or failure of the operation. Sooner or later it is the experience of almost every practising surgeon to have to record as a failure the final results of a particularly satisfactory piece of work, because of some error of judgment in the care of the case subsequent to the operation. This error of judgment, failure to do the right thing at the right time, may be an error of omission or one of commission, either on the part of the surgeon himself, his assistant, his house officer, or his consultant, whichever has to do with the post-operative care of the case.

Along with the development of surgery and its technic have gradually come to be recognized certain definite principles of post-operative treatment, and it is with these, for the most part, that this paper will deal. "For the most part," advisedly, because in a field where definite, detailed procedure is so essential and so vitally a part of the whole broad subject, it is impossible entirely to ignore particulars; and in surgery, as in warfare, sanitary science, or football, it is attention to detail that makes for success.

Though it may seem paradoxical, post-operative treatment really begins with pre-operative care. By this we mean that in order better to get the desired ultimate results, it is essential that our patients be properly prepared beforehand, both mentally and physically. We all know with how much more fortitude and complacency the average individual approaches the operating table if he has become somewhat familiar with his surroundings, with those who are to care for him during his convalescence, and if he has been made to feel that the impending operation is not, after all, such a terrible bugaboo. Mental apprehension beforehand unquestionably lowers to a certain extent, depending, of course, upon individual temperaments, the patient's resistance and recuperative powers. Perhaps the most striking example of this is in goitre cases. The majority of these patients do much better after operation if they are kept in ignorance beforehand of the exact time, or even day, at which the operation is to be done. The same is true, perhaps to a lesser degree, of highly excitable and nervous women, who are likely to be sleepless and frightened, and to lose ground by delay. But on general principles it is better, when possible, to give patients a preliminary rest in bed before operating. Besides the confidence already referred to, which they acquire, the surgeon has an opportunity to study carefully the case, to learn the physical conditions, a knowledge of which may prevent a subsequent calamity, to become acquainted with the peculiarities of the individual, and to determine what anesthetic is best. The presence in the urine of acetone or diacetic acid forbids any but an emergency operation. Sugar, or granular or fatty casts, or a considerable quantity of albumen, makes us hesitate to operate. The advisability of operation on patients with hemoglobin under 50%, except for

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bleeding, is questionable. Constipation should be corrected as far as possible. Besides increasing the possibility of wound infection through escape of intestinal bacteria into the tissues, it adds to the patient's discomfort; also, by decreasing the patient's resistance, it increases the chance of infection from without. Violent purgatives should be avoided. They act as depressants. The rational of emptying the bowels by a saline cathartic the night before, and by an enema on the morning of operation, is that should a shock enema become necessary during or after operation, the bowel will absorb the enema much more readily. Also, in abdominal operations the intestines are much more easily manipulated. If iodine is to be used as a disinfectant, the surface to which it is to be applied may be scrubbed with soap and water several hours before, but not immediately preceding, operation. This is because the water swells the surface epithelium and prevents the iodine from entering into the skin. Operations should preferably be done in the morning. Thus the patient is saved several hours of dread and worry, and the surgeon is at his best.

Certain post-operative complications may be guarded against by watchful observation on the part of the anesthetist during the operation. In capital or prolonged procedures, in operations upon weak and debilitated persons, or at times when haste is essential, much valuable information may be had from frequent readings of the blood pressure. The warning of approaching disaster given by this scientific course enables the surgeon to order proper stimulation to prevent the calamity, and oftentimes from going on with the operation to do something advisable, but not absolutely necessary. It is perfectly possible and practical for the anesthetist to follow the blood pressure without in any way interfering with the operator. This is done by the auscultatory method, using a Tycos instrument, the bulb and dial of which may be carried to the head of the operating table merely by lengthening the rubber tubing.

Immediately at the end of the operation, the patient is to be carefully wrapped in blankets and placed in a bed previously warmed with suitable heaters. The temperature of these should not be above 110° F. When the patient is put to bed, these heaters should be placed about him, *always* outside the blanket, never inside, for the danger of burns is ever-present, and cannot be too strongly emphasized. The patient must never be left alone. A reliable nurse or attendant should remain with him to guard against accidents from choking or vomiting, or to prevent any act of violence. A watchful attendant will frequently note the appearance of symptoms premonitory of collapse, which demand immediate relief measures. Following operations in or about the mouth, the tongue must sometimes be held forward until the patient is fully out of the anesthetic.

Unless there be special contra-indications, it is best to place the patient on his right side, propped there by pillows at his back. Hewitt advances these reasons for so doing: "In this position stertor at once ceases; the tongue gravitates to the side of the mouth, and a free airway is established; mucus and saliva are not swallowed; coughing is prevented, and should vomiting occur, any vomited matter will readily find an escape from interfering with breathing."

It is the writer's practice, almost without exception, to give hypodermatically, as soon as the patient is in bed, or recovering consciousness, a proper dose of morphine. This keeps the patient quiet until the immediate effects of the ether have worn off, and prevents the restlessness so common after anesthesia. Also, it lessens the pain incidental to the operation.

As an accompaniment to post-anesthetic nausea and vomiting, it is usual to have a certain amount of pallor and feebleness of pulse. This should occasion no alarm, unless it continues and becomes progressively worse, when measures should be taken to combat it.

As the patient recovers consciousness, there arises the question of posture. Probably because it has become a custom, patients are usually kept on their back. There are many definite objections to this position. "Women," says Morse, "who are kept long in this posture after laparotomy are very liable to develop cystitis, from inability to empty the bladder completely. The position also undoubtedly increases to some extent the nausea and vomiting, as it allows the mucus or saliva to collect in the mouth and fauces." It is also responsible for much of the backache of which patients complain. Very few people, as a matter of fact, sleep wholly on the back, and when forced to do so, are most uncomfortable. The posture straightens the lumbo-sacral curve, putting on a stretch the muscles and ligaments in this region, and thus inducing pain. If, for any particular reason, the patient *must* lie on his back, the lumbar region and knees should be supported by pillows. There is also an increase in the tendency to gaseous distention in the dorsal position.

It is our practice to allow patients to assume, as soon as they wish, whatever position is the most comfortable, nor do we remember any evil results therefrom.

The Fowler, or semi-erect position, is one of our greatest assets in treating cases of appendicular abscess, septic peritonitis, or any condition in which the patient has been exposed to abdominal infection. In this position, all the fluids gravitate to the pelvis, the lymphatic supply of which is relatively poor. This means, of course, less absorption. It is in the upper part of the abdomen that the lymphatics are most abundant, hence the desirability of keeping septic material from this area. The fluids gravitating to the pelvis are very readily carried off by proper wound drainage.

Thirst. One of the most unpleasant after-effects of anesthesia is the intense thirst,—not infrequently it is more distressful to the patient than the pain itself. DaCosta and Kalteyer have demonstrated that following anesthesia the watery elements of the blood are diminished, and that the intensity of the thirst is nearly always increased in proportion to the amount of blood lost during the operation. The thirst following ether is probably greater than after any other anesthetic. One of the most satisfactory methods of allaying this condition is to give directly after operation, either before the patient leaves the table, or as soon as he is put to bed, a high rectal enema of warm salt solution. The average rectum tolerates and retains from four to six ounces, which may be repeated every four hours. This also acts, of course, as a stimulant. The fluid is absorbed from the rectum into the circulation, thereby replacing the lost element. Patients invariably call for cold water, but sips of hot water unquestionably give greater relief. It is our custom to allow the patient a liberal amount of hot water if he desires it, soon after recovering from ether. This almost invariably washes out the stomach, thus overcoming, to some extent, the nausea and vomiting, and enables the stomach to retain more of the fluid which is subsequently allowed. If the water does not suffice, a little champagne on shaved ice, a little hot black coffee, cold wet cloths kept in the mouth, or frequently bathing the lips and rinsing out the mouth with cold water, usually does.

Nausea and Vomiting. Post-operative nausea and vomiting is another exceedingly uncomfortable complication, and one which may at any time assume serious proportions. The nausea coming after ether is likely to be much more severe than that following gas-oxygen, chloroform, or any of the so-called ether-chloroform-ethyl-chloride mixtures. Indeed, it is advanced as one of the strong points in favor of gas oxygen anesthesia that it is free from this unpleasant complication. This has been the writer's experience, too, that while there usually is a certain amount of nausea after this form of anesthesia, it is likely to be much less than after the other forms. In general, it may be said that the amount of vomiting after anesthesia is in direct ratio to the length of the anesthesia and the quantity of the anesthetic. Bearing this in mind, it should be our endeavor to reduce to a minimum the volume of anesthetic.

The nature or extent of an operation undoubtedly has its influence upon post-operative vomiting. Operations upon the intestines, female pelvic organs, protracted laparotomies in which the bowels are exposed or freely manipulated, or in which there is much traction on them, are more likely to be followed by post-operative sickness. Lewin advances the theory that "the vomiting is frequently due to swallowing the mucus and saliva containing some of the anesthetic in solution. The anesthetic thus acts as a direct irritant to the stomach, and vomiting is induced by the elimination of the drug through the glands of the gastric mucosa." He suggests two plans to prevent this local effect: first, a local cocainization of the gastric mucosa; second, by protecting it by the use of some substance which will form a coating over it, such as mucilage of acacia, or by a thick decoction of Iceland moss. To combat these conditions numerous remedies have been used. Hot coffee, champagne, small doses of cerium oxalate, or bismuth sub-nitrate, or calomel in small and frequently repeated doses, sodium bicarbonate, have all been employed with more or less effect. We personally have found lavage with sterile water or salt solution to give the most beneficial results.

Gastro-Mesenteric-Ileus. Following upon post-operative vomiting we every now and then meet with a case of so-called gastro-mesenteric-ileus. In this there is a persistent and seemingly uncontrollable vomiting, at first merely of mucus and bile, and later brownish, foul-smelling material. The patient is usually very much distended, and almost always it is possible to outline the stomach, which is the most distended organ of all. The condition is one not absolutely understood, but is probably due to kinking of the gut at a point near the stomach. Unless recognized and properly treated, it is very likely to end fatally. The only treatment which is of real benefit is frequent and thorough lavage. As the tube enters the stomach, there is usually a tremendous rush of gas, followed by quantities of the material described. We recall the case of a young, vigorous man, who had a severe local peritonitis following an acute appendiceal attack. His vomiting began as soon as he recovered from ether, becoming increasingly more violent, and within a few hours the character of the vomitus became that already referred to. The stomach was tremendously ballooned, making respiration extremely difficult. Lavage with normal salt solution was instituted and repeated many times, at two-hourly intervals. It was several hours before there was noticeable improvement. It was necessary to continue the lavage for nearly three days before the stomach washings were clear. As soon as the conditions improved, the patient began to get better, and made an uninterrupted convalescence. In this class of cases there is likely to be marked prostration or even collapse, calling for most vigorous stimulation.

Pseudo-Ileus. Another unpleasant complication now and then encountered is that of intestinal paresis, or pseudo-ileus. To again quote Morse, "This implies a form of intestinal obstruction brought about by a certain degree of muscular paralysis of the intestinal tract." The condition may follow prolonged intestinal exposure, but is most likely to follow minor procedures. No definite pathological condition has, so far as we know, been demonstrated in these

cases, but rather they seem to be neurotic in character, and to be due to lack of intestinal nerve force. It is very easily confused with peritonitis. There is marked distention of the bowels, apparent exhaustion of the patient's vital forces with sub-normal or normal temperature, feeble pulse, the symptoms usually coming in from 48 to 72 hours after the operation. One of the most distressing symptoms is inability to move the bowels. In treating the condition, the aim, of course, is to establish peristalsis as quickly as possible. The stomach should be washed out, and high rectal enemas containing vigorous peristaltic agents, should be given. An enema which we have found useful consists of magnesium-sulphate, glycerine, salt solution, each 2 oz., powdered aloes, 40 grains. This mixture is very often sufficient, but if it fails, to it may be added 2 dr. of turpentine, often with good results. At the same time should be given active cathartics from above, such as calomel in divided doses, followed either by Rochelle or Epsom salts. Eserin salicylate may be given in 1/20th grain doses subcutaneously.

Hiccough. Hiccough is sometimes persistent and hard to control. It is usually indicative of inflammatory conditions of the abdominal viscera. It is seen with post-operative as well as ante-operative peritonitis. If it be due to gastric irritation, lavage is sometimes promptly curative. Morphia may control where other remedies fail. Sometimes ether sprayed over the epigastrium is sufficient to cause it to disappear.

Post-Anesthetic Complications. There are certain conditions directly the result of the anesthetic itself, which we meet at times. Such are ether burns of the face, easily prevented by spreading vaseline over all surfaces with which the ether may come in contact, either directly or through the cone; conjunctivitis, which is the result either of the ether vapor or of the ether itself getting in the eye. This is best prevented by a towel over the eyes, but if once acquired, usually yields promptly to frequent washings of the eyes with boracic solution. Ether pneumonia, fortunately, is rare. It is usually of the broncho type, but may develop into the lobar. One of the early tragedies in our experience was a death from ether pneumonia, following so simple an operation as amputation of the thumb. The treatment of this type of pneumonia is very like that of the ordinary pneumonias with which one meets. It is apt to run a short, sharp course. Acute nephritis, with suppression of urine, is rarely met with, but is a condition which must be borne in mind. The treatment of this complication is essentially that of acute suppression under non-surgical conditions, hot packs, diuretics, and purgation.

Post-Operative Temperature. Following any operation it is usual for the patient to have a certain amount of temperature. This differs materially from surgical fever, and bears no relation to infection, when moderate in degree. This type of fever in clean cases seldom lasts more than 48 to 60 hours, and rarely exceeds 102° or 103° F. There is usually associated with it an increased pulse rate. Let alone, the condition usually subsides of itself, but practically always disappears directly after catharsis has been established.

If for any reason, the temperature does not fall, it should lead the physician to a careful investigation of his patient, both local and general, for it must always be borne in mind that there may be occurring some condition due in no wise to the operation. One of the most striking examples that we recall was that of a patient operated upon for gall-stones. She developed typhoid and, on top of this, a pneumonia. Needless to say, she died. We frequently have seen tonsillitis intercurrently during convalescence, also scarlet fever and other diseases directly to blame for the continued temperature, and easily overlooked. Excluding extraneous conditions, however, a continued elevation of temperature after a clean operation usually means wound infection.

Wound Infection. Wound infection may either remain local, or, by dissemination, become general. When it is local, the patient usually complains of tightness, soreness, or stinging pain in the wound itself. Investigation may show nothing, whatever, especially in the early stages. Soon, however, it will be noticed that there is a little swelling at some point in the wound, with possibly a little redness if the infection be near the surface. Palpation reveals marked tenderness, causing the patient to pull away. Such an infection is of one of two types,—phlegmonous, or there may be actual pus formation. In the former type, frequently changed poultices of some hot antiseptic, preferably bichloride in a 1-2000 solution, is sufficient to overcome the infection. If this fails it may be necessary lightly to scarify the area. In the very early stages an ice bag will usually abort the infection. In those instances in which actual pus formation has taken place, there is only one thing to be done. That is, to open the wound and drain out the pus. In doing this be sure that the opening is large enough. If the pus has burrowed, the incision should be carried directly over the path of the burrow and virtually to its limit. This free drainage induces healing very much more quickly than wicking the wound underneath the skin.

The other type of post-operative infection is a septicemia, or pyemia, which, of course, means a general infection. To combat this, drastic measures must be taken. In general, the various channels of elimination should be encouraged to do their best. The patient's strength should be kept up by proper stimulants, and the source of the infection sought out and eradicated.

Post-Operative Hemorrhage. This may be a matter of gravity, or merely one of annoyance.

If of the former type, there is sudden collapse, pallor, rising pulse, which becomes constantly more thready, and if the hemorrhage be occurring in the abdomen, it is usually possible on percussion to obtain shifting dullness in the flanks. Such a condition calls for immediate interference on the part of the surgeon. The patient must be anesthetized, the abdomen opened, the bleeding point found, and secured. Once this is done, stimulants must be administered. In those hemorrhages referred to as *annoying* it usually means that there is going on a capillary or venous ooze. This type is most likely to be seen after amputations or operations upon pus cavities, bones, ribs, the tongue, or on any vascular areas. It may be due to the slipping of ligatures, or neglect on the part of the operator to ligate the smaller vessels, or failure to stop all oozing at the time of the operation. This form of hemorrhage becomes manifest in from two to four hours after operation through the dressings and bandages becoming stained or soaked with blood. Dressings should be immediately removed, and the source of hemorrhage, if possible, ascertained. If the bleeding is from a vein, all constriction above the wound must be removed. If the hemorrhage is not profuse, new dressings should be firmly applied and held in place by a snugly-fitting bandage. Usually this is all that is necessary. If the bleeding point is deeply seated, pressure may be applied in the form of a compress directly over the surface of the wound.

Care of the Wound. As a general principle, it may be said that the less we interfere with clean wounds, the better. It is usually well to examine a wound from 48 to 72 hours after operation. If infection is going to occur, it usually is manifest by that time, and it is early enough in the majority of cases to cut short the infection. After this first dressing, unless the patient complains of tenderness, or unless there is a rise in temperature, the wound need not again be looked at for three or four days. If at any time on examining the wound, it is found that the stitches are pulling or cutting, or if there is redness about them indicative of slight infection, they should be immediately removed. On general principles, stitches may be taken out on the seventh or eighth day. Depending upon the length, situation, and character of the wound, we may or may not use adhesive strips to hold the edges together following the removal of stitches.

When to remove the wicks is a question of importance. If the wick is put into a clean wound at the time of its closure, merely for the purpose of draining off whatever serum or blood may accumulate, as in hernias, or in clean dissections upon the neck, the wicks or drains may be safely withdrawn within forty-eight hours. Whether or not the original should be replaced by another at this time must be decided in each instance. If there be much dead space, and if there has been a considerable amount of fluid drained away, it is advisable to reinsert a wick for another day or so, but only under these conditions. As to the time when to remove drains from infected wounds, there can be no definite rule. Each case must be considered by itself. In abdominal wounds drained for a moderate degree of infection for a local peritonitis, it is our custom to start the wicks on the fourth or fifth day, to withdraw them two or three inches on each succeeding day, until on the seventh or ninth we completely remove them. If there has been much infection, or if the wound is draining profusely at the time the original wicks are removed, they should be replaced and carried well into the abdominal cavity along the same tract in which they were lying. In these pus cases the wick should be changed daily, after the original has been withdrawn, or at the most, every other day. If the wound is to be irrigated, irrigation should not be begun under the tenth day, for before that time the walling-off adhesions have not become sufficiently established to safely warrant irrigation. Various substances may be used for washing out wounds,—mild bichloride, a boric solution, or, what the author believes to be best, normal salt solution, which tends to encourage healing. In these cases in which there has been comparatively little infection, and from which the abdominal wicks are removed from the fifth to the seventh day, there should be carried down to, but not through, the peritoneum, a small gauze drain. This may be gradually withdrawn during the next three or four days, and left out entirely by the eighth or tenth day, and the edges of the wound strapped together.

Feeding after Operation. Patients should be given nothing to eat until the nausea and vomiting has entirely disappeared. Following its disappearance they may have, for the first twenty-four hours, liquids without milk. Such a diet includes milk broths, the white of eggs, grape juice, orangeade and lemonade. Ginger ale is sometimes given, but we feel that it is productive of so much gas that it should be interdicted. Usually 48 hours after operation we give our patients 2 gr. of calomel in quarter-grain doses, at half hourly intervals. In an hour after the last dose we follow the calomel by a saline cathartic, either magnesium sulphate, or citrate of magnesia. One hour later this is followed by a compound enema, containing glycerine, magnesium sulphate and water, 2 oz. of each. After the patient's bowels have freely moved we allow him a diet of soft solids. This includes dropped eggs, moistened toast, crackers and milk or broth, jellies, strained soups, bread without crust, custards, soft puddings and the like. Within another twenty-four hours, if all is going well, we increase the diet to include solids, starting, of course, very gradually. By the end of the fifth or sixth day, the patient is usually allowed that which is called house diet.

Post-Operative Shock. Immediately after major operations, and in minor ones in which there

is evidence of exhaustion, and before the patient is removed from the operating table, a high shock enema should be given at a temperature of 110° F. The ingredients should be black coffee, brandy, salt solution, each 2 oz., and 1 drm. of adrenalin chloride. Some stimulant should also be administered hypodermatically. Strychnia is commonly employed, but seemingly better results are obtained from camphor in oil, 3 grains in about one-half drachm. Other measures combative to shock, whether it comes at the end of the operation or later, are the placing of heaters about the patient, bandaging of the lower extremities from toes to thigh, elevating the foot of the bed from 8 in. to 12 in., and in severe cases a pint of normal salt solution containing either 1 drm. of adrenalin, 1 oz. of brandy, or both, should be given under the greater pectoral. The adrenalin should never be given in any greater concentration than this, as it may cause a local necrosis of tissue, just as salvarsan does, which is extremely difficult to heal. By rectum, until there is response to the relief measures, there should be given every four hours, 2 oz. of brandy in 4 of salt solution. Other stimulation may be given as is considered necessary. In cases in which the shock is primarily due to great loss of blood, intravenous infusion of one pint of normal salt solution, or a direct blood transfusion, will many times bring the patient to a favorable turning point. It is always well, too, in shock cases, to give morphia, as the more quiet the patient is, the better. The drug, too, undoubtedly has an indirect stimulant effect. As the pulse begins to improve, the stimulation may be gradually reduced, but it should not be too suddenly withdrawn. It is well to leave the foot of the bed elevated for several hours after the pulse has become fairly good, for a sudden change in the patient's position may cause a recurrence of conditions.

There is a great deal more to be said about post-operative treatment, but the aim here has been to touch upon the underlying principles, and briefly to describe treatment of some of the more common complications. But let it once again be emphasized that we can hope for good results from our surgery only by giving our patients the most watchful and detailed treatment during convalescence.

BIBLIOGRAPHY.

Da Costa: Modern Surgery, 1914.
Morse: Post-Operative Treatment, 1907.
Osler: Practice of Medicine, 1905.

Clinical Department.

STREPTOCOCCAL INFECTION SIMULATING DIPHTHERIA.

By D. M. Lewis, M.D., New Haven, Conn.,
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Epidemiological aspects of the spread of the so-called "grippe" are notable from their complete absence. The following case, a type commonly seen during the past season, is of especial interest in its epidemiology.

Case History. C. M., age 3, female, after sudden onset of laryngeal stenosis, was intubated and sent to the Isolation Hospital as a case of diphtheria. Reported January 28, 1916.

Epidemiology. Family, one of six occupying the house, consisted of five children. Of these, R. M., male, age 3, showed a bilateral excoriating sanguino-purulent nasal discharge with crusted lesions of chin and cheek. The remaining three children showed no nose or throat lesions, and there was no history of previous sore throats. Of the children of the other five families, one, N. C., a female, age 3, had been reported as a clinical case of diphtheria on December 28, 1915, and had at this time an acute nasopharyngitis. Cultures in December had repeatedly shown the streptococcus only. The onset, temperature and tonsillar lesions were corroborative, and her infection was traced to a family of four children, all of whom had had streptococcal sore throats in August, 1915, and at the latter period two of them had recurrences. One of the latter was a female, aged 3, and a playmate of N. C., living in an adjacent house. R. M. had had the nasal lesions for several days, the chin and cheek lesions appearing after the nasal discharge. For the ten days previous, he had been a constant companion of N. C., after the latter had been released from quarantine.

Cultures. R. M. showed pure cultures of the streptococcus from both nares and from the chin and cheek lesions. The remainder of the family showed negative cultures. N. C. showed positive streptococcus only.

Course of Infection. On February 8, 1916, two older sisters of R. M., ages 8 and 10, had streptococcal sore throats, and the remaining child, an infant, at this time showed recent impetiginous face lesions, yielding, on culture, the streptococcus. The entire family was quarantined from January 28 to latter February, when C. M. was returned from the hospital. At this time the nasal discharge and face lesions of the carrier, R. M., had been cured. At no time did R. M. develop a sore throat.

Conclusions. Streptococcal infections may not only exactly simulate diphtheria clinically, but there may likewise be demonstrated true carriers. The carrier, as in diphtheria, may be a pharyngeal or a nasal one in type. The latter type, as in diphtheria, is the one giving rise to secondary cases.

AN INTERESTING CONTACT CASE OF DIPHTHERIA.

By JOHN A. CECONI, M.D., BOSTON,

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AN interesting and instructive case was officially called to the attention of the Boston Health Department, recently. It emphasized the well known fact that care should always be exercised in determining the diagnosis where there is a possibility of a venereal infection or otherwise.

Katherine ——, age 7 years, was taken by her mother to the family physician on account of the discovery by the mother of a discharge from the vulva. The physician, with apparently undue haste, made the diagnosis of gonorrhoeal infection and stated that in his opinion the child had recently been raped. No smear was taken and the diagnosis was evidently made solely on the presence of the discharge from the vulva. The statement made by the physician naturally disturbed the mother and father of the little patient and they consulted the Boston Health Department. Upon being assigned to the case, I found that the child had a sero-sanguineous discharge from the vulva. There was a decided exudate on the lower part of the vulva and it extended on to the perineum in the form of an incrustation. There was a noticeable quantity of blood exuding from this exudate. There was a marked odor which was the first indication to the mother that there was anything unusual. I found no clinical evidence of rape.

On questioning the child, I learned that there had been a discharge for at least one week. Eight smears were taken for the purpose of determining the presence of gonococci. They were all reported negative by the laboratory. These smears were taken from various parts of the vulva, from the urethra and from different areas of the exudative process.

The next morning I was called by the mother to treat another daughter, age 14 years, and found her with a clinical case of faucial diphtheria, which diagnosis was confirmed by a positive K.L. from the laboratory. This development naturally suggested an investigation for the probable carrier in the household, and a routine examination disclosed another sister, aged 5 years, with a distinct membrane in each nostril from which a positive culture was reported from the laboratory. This last sister slept with the child who had the exudative process in the vulva, and the former, on further questioning, was found to have had a bloody discharge from the nose for two weeks previously.

Katherine was given 3,000 units of anti-toxin as soon as I made a clinical diagnosis of diphtheria in her other two sisters. Three thousand units were subsequently administered to her eight hours later. No other treatment was instituted in her case.

Marie, the child with clinical faucial diphtheria, received 15,000 units of anti-toxin in forty-eight hours. Margaret, who had clinical nasal diphtheria, was given the same quantity in the same interval.

Two other children in the same family, who were clinically negative, naturally received an immunizing dose of 1,500 units. Marie, with faucial diphtheria, made an uneventful convalescence, showing two negative cultures on the eighth day. Margaret, with nasal diphtheria, had a protracted convalescence, two successive negative cultures for release not being obtainable until the twenty-fourth day from the date of the first treatment.

In this (Katharine's) case, the discharge from the vulva cleaned up in forty-eight hours after the first injection of anti-toxin. The exudate disappeared in the same length of time.

It may be remarked in her case that she showed no positive cultures, but it is a well recognized fact among bacteriologists and epidemiologists, that not infrequently such is the case in diphtheritic vulvitis, on account of the presence of other micro-organisms common in the vaginal secretions which prevent the growth of K.L. bacillus.

Diphtheria of the vulva is not a very common disease, but it would seem to me that we have here a well defined case of this type. The presence of the other two cases of diphtheria in the same family, the fact that the child with nasal diphtheria slept with Katherine (vulva type) showing the probability of contact, and the very rapid recovery after the administration of anti-toxin, certainly seems to bear out my contention and emphasizes the fact that one should be ready to recognize the probability of contact cases, and that it is possible to have diphtheria invade unusual channels.

Reports of Societies.

NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

THE second meeting of the Society was held at the Boston City Hospital on November 18, 1915, with the President, Dr. Abner Post, in the chair.

The following cases were presented and discussed:

1. RODENT ULCER (TEREBRANT VARIETY). PRESENTED BY DR. T. W. THORNDIKE.

The man was 49 years of age, with no venereal history. Fifteen years ago two or three hard lumps appeared on the forehead. Six years ago the disease became pronouncedly ulcerative, the erosion beginning at the inner canthus of the eye and progressing steadily, without any tendency toward cicatrization, until the whole upper half of the left side of the face had been destroyed down to, and including, in places, the bone.

The man has had x-ray treatment, with much resulting benefit.

2. CASE FOR DIAGNOSIS. PRESENTED BY DR. W. P. BOARDMAN.

The condition appeared about one year ago, just after the birth of a child. At first the appearances were those of an acute eczema,—deep pigmentation, scaling, sharp borders and marked rosacea. Since then the eruption has changed very little. Many forms of treatment have been tried, and the most

successful results have been obtained from salicylic acid and resorcin.

DR. TOWLE believed the condition to be an irritated chloasma rather than an acute eczema.

DR. BOARDMAN stated that scaling was at first a marked feature.

DR. TOWLE replied that the original chloasma had probably been modified by treatment.

3. PSORIASIS. PRESENTED BY DR. W. P. BOARDMAN.

The child was four years of age and was brought before the Society merely because of the extent and the severity of the process in one so young.

4. LUPUS VULGARIS. PRESENTED BY DR. T. W. THORNDIKE.

A case of lupus vulgaris of the serpiginous type, which first appeared as a small nodule when the patient was about twenty-two years old, in the beginning gradually enlarging, but later growing with rapidity. The blood was negative according to a Wassermann test. The patient has had various forms of treatment, including CO_2 snow and radium, without any success, but has finally received four x-ray exposures and now shows appreciable improvement.

DR. WHITE drew attention to the seat of the disease in the scalp—a rather unusual site for lupus vulgaris.

5. LUPUS VULGARIS. PRESENTED BY DR. T. W. THORNDIKE.

A case of lupus vulgaris of the exfoliating type. The lesion is somewhat scaly, leaving very little cicatrix; in fact the cicatrix rather resembles an atrophy than a true scarring. The edges of the atrophic area are not elevated; there have never been any nodules noted, and the process has shown no tendency towards ulceration. For these reasons it would be well to consider whether this is not a case of lupus erythematosus. The Wassermann test is negative. The patient has improved under x-ray treatment.

DR. BURNS said that he had seen the patient five or six years ago. There were then very evident lupus nodules about the periphery, and distinctly nodular, ulcerative and exfoliating areas were present. The diagnosis of lupus vulgaris was made at that time and should be made now.

6. ECZEMA. PRESENTED BY DR. G. P. HOWE.

A case of very severe eczema, followed by very extensive alopecia. The disease is now clearing up, but as yet the hair has scarcely begun to return.

7. KELOID. PRESENTED BY DR. T. W. THORNDIKE.

Duration, fifteen months. The young woman burned herself with alcohol, and the subsequent keloid has caused deformity, contraction and pain. The new growth was excised, but after the operation the recurring keloid was 50% larger than the first, and exquisitely tender. The patient has had twenty-five exposures to the x-ray, and as a result the pain has entirely disappeared, the growth itself has subsided certainly 50%, and there is now no discomfort whatsoever.

8. CONGENITAL NAEVUS PIGMENTOSUS ET PILOSUS. PRESENTED BY DR. T. W. THORNDIKE.

The patient states that her mother, just previous to patient's birth, was attacked by a dog. The great interest in the case lay in the form of therapy to adopt. Should the hair be removed by x-ray, with the possibility of a resulting burn? Should CO_2 snow or liquid air be employed? Should the area be excised and a plastic operation done? One must remember that these growths are potentially malignant if left alone. If the lesion is irritated now, the possibility of subsequent malignant growth is increased.

DR. BURNS advised the use of CO_2 snow, stating that where the hair was fine the snow destroyed both the hair and the pigment, but where the hair was coarse then electrolysis or x-ray had to be employed in addition.

DR. OLIVER preferred excision in the present instance.

DR. THORNDIKE asked if excision would tend to encourage malignancy.

DR. OLIVER replied that the chances of malignancy were very slight.

DR. THORNDIKE stated that in his opinion the dangers of malignancy in these moles was more theoretical than actual.

9. ECZEMA SEBORRHEICUM. PRESENTED BY DR. W. P. BOARDMAN.

An unusual example of seborrheic eczema of six months' duration. The patient has been under treatment for some time. The process is most marked in scalp, axillae, umbilicus and in genitocrural region. The hands have been the most resistant to treatment, growing worse under salicylic acid and resorcin, but have improved slightly under crude coal tar ointment. In the axillae the most typical areas appear, sharply outlined, greasy and scaling.

10. LUPUS VULGARIS. PRESENTED BY DR. T. W. THORNDIKE.

The patient was exhibited to illustrate a most gratifying result obtained by the use of liquid air. Twenty-five applications have been made. The disease was extensively ulcerative when first seen. The exhibitor regarded this as the first successful result he had observed after the use of liquid air.

A discussion followed in regard to the respective values of liquid air and CO_2 snow, and in conclusion Dr. Thorndike said that he preferred CO_2 snow because he could mold it to the shape of the lesion, and could feel under his fingers exactly what he was doing, and, in addition, liquid air was costly and CO_2 snow cheap.

11. XERODERMA PIGMENTOSUM. PRESENTED BY DR. F. J. KEANY.

The man, now twenty-eight, was born in Russia. The first lesions appeared when he was three and a half years of age, and the patient presented all the classical symptoms of the disease. In addition to the pigment and atrophy and teleangiectases, some of the lesions have become epitheliomatous and have been removed surgically. The brother is in a similar condition.

DR. WHITE remarked upon two extraordinary, apparent facts. The disease is apt to occur in two members of the same family, and affects two broth-

ers or two sisters, but never in his knowledge a brother and a sister.

12. SYPHILIS OR CARCINOMA OF THE TONGUE. PRESENTED BY DR. T. W. THORNDIKE.

The man was infected with syphilis twenty-five years ago, and at the time received extensive treatment. About 1912, inguinal adenitis developed. At the same time his tongue began to thicken and became fissured and roughened. Fifteen months ago the tongue began to hypertrophy, and at the present time one can see its marked sclerosis and appreciate the possible question of malignancy. Severe pain, of a nocturnal character, radiating around occipital and temporal regions, is now a marked feature. There have been many positive Wassermann tests. The tongue does not react to mercury or to salvarsan; intramuscular injections and iodide of potash cannot be tolerated, for within twenty-four hours swelling of the submental glands develops. A biopsy was made at another institution and the diagnosis of carcinoma made. We are not willing, in this hospital, to say that the disease is carcinoma, nor are we willing to say that it is lues. We even go so far as to say that it is not "chronic inflammatory", but think there is a secondary complication superimposed here. In this hospital mercury and x-rays have been employed and the glands have gone down remarkably under the treatment.

DR. ABNER POST stated that the patient had had negative as well as positive Wassermann tests. In this case the two pathologists do not agree and the Wassermann tests do not agree. Pain, however, radiating through the ear, is much more common during malignant disease than during syphilis.

Many of the members were inclined to agree with Dr. Post that carcinoma was present.

The following cases were presented by DRS. C. J. WHITE, F. S. BURNS, E. L. OLIVER, J. H. BLAISDELL and L. J. CUMMINS.

1. URTICARIA PIGMENTOSA.

A child of five months, whose cutaneous eruption began at the age of six weeks. The present lesions are distributed over the entire trunk, face, scalp, and even on palms and soles. The mother says the outbreak first appears as bright red maculo-papules, which finally subside, leaving brown pigmented macules. The eruption does not itch. The lesions vary in size from a pea to an almond, and are buff to chocolate-brown in color. The child is breast-fed and appears to be perfectly well. The mother states that no medicine has been given to the patient. All in all, the baby presents as perfect a picture of the disease as one could wish to see.

DR. WHITE stated that while the mother was carrying the child, and after its birth as well, she had eaten a great many oranges. Assuming that an excess of acid in the diet was a probable factor in the prolongation of urticarial conditions, could not this rather excessive ingestion of oranges on the mother's part be a factor in the child's present condition.

2. ERYTHRODERMIE PITYRIASIQUE EN PLAQUES DISSÉMINÉES.

Duration, four years. The process started with a small lesion on the chest, and has continued steadily, without intermission, ever since. Today the process is present over the chest, abdomen, inner aspect of arms, inner aspect of thighs and above the buttocks. The characteristic lesion is one to two inches in diameter, and is a sharply defined, slightly elevated, yellowish red, round or oval area. At first appearance it closely resembles an urticarial wheal. There is no distinct scaling, although the lesion is distinctly seborrheic in type. Mild itching is present.

3. A CASE FOR DIAGNOSIS.

The process, now three years old, involves both hands and extends somewhat above the wrists, being more extensive on the left than on the right. The patient states that the condition began on the center of the palms, and then slowly spread thence to other portions of the hand. In the palms there is a moderate amount of keratotic thickening, the surface of which is stippled with a profusion of small pearls. Elsewhere the outbreak consists of a moderately bright erythema, whose borders almost everywhere are abrupt. In places there also seems to be slight infiltration and a little dry scaling. The patient complains of very little sensation, and there are no recognized constitutional symptoms. On the soles of both feet, extending half to one inch on the lateral surface, there is a similar erythematous process, also with well demarcated edges. Here the patient complains of some itching and mild burning. According to the woman's story, she took no drugs before the skin affection developed. In differentiation we may consider dermatitis medicamentosa and pellagra as possibilities.

DR. TOWLE remarked upon the keratotic condition of the palms, and asked if the woman did much sweeping. He believed that some systemic process, possibly connected with the sweat ducts, lay at the bottom of the trouble.

DR. BURNS replied that there was no history of an occupational factor in the case.

DR. WHITE believed the disease to be an arsenical keratosis. To be sure, the patient had denied the ingestion of any drugs, but such a condition could be produced by the long-continued absorption of arsenic, while on the other hand, no other theory would explain so well the cutaneous appearances present.

4. VITILIGO?

The roughly symmetrical eruption, now eight months old, is found on the trunk and thighs, sparing the face, arms and lower legs. It consists of sharply defined, large and small, grey-brown areas, without any distinct elevation or appreciable thickening. The lesions on the back, neck and thighs are similar to those described above. On the abdomen, extending to flanks, are apparently somewhat similar areas, which are distinctly lacking in the normal pigment of the skin, resulting in a curious mottled appearance of the body. Certain lesions about the breast and on the flanks have a distinctly violaceous surrounding border. The lesions on the thighs and shoulders show the slightest possible intimation of thickening, but in no place is there distinct hardening or sclerous change, as the first appearance of the lesions would suggest. The patient complains of mild itching, and states that the process started on the chest and developed within a few weeks over the other affected parts of the body. No lesion that has appeared has entirely disappeared. The young woman has been to no physician, and has applied no treatment, internal or external.

Dr. White felt that the case belonged more to the group of atrophies and pigmentary changes of the skin than to the sclerous groups.

5. LUPUS ERYTHEMATOSUS?

The patient was a boy of five years, and for the previous eighteen months the "butterfly" area of his face and nose had been very slightly thickened, somewhat erythematous, furfuraceously scaling, and very sharply defined from the surrounding normal skin.

On account of the child's age one was reluctant to call the disease lupus erythematosus, but a careful examination of the scales and lanugo hairs had failed to disclose the presence of any mycelium or spores, so that the possible, though not probable, question of ringworm was ruled out.

6. LUPUS ERYTHEMATOSUS.

Duration of process, fifteen years. The patient says that the eruption disappears every winter and returns in summer, but such a story is highly incredible. Today, the whole face and back of the neck, the whole outer aspect of both forearms and the whole top of the scalp show a finely scaling or glazed, atrophic condition as white as mother of pearl where not dotted or blotched with active, scarlet, somewhat elevated areas. The scalp, in the affected parts, is totally denuded of hair.

7. DERMATITIS HERPETIFORMIS.

A boy of six, whose case had been carefully studied in the skin ward. He was not up to the mark mentally; he was rather underfed; he had poor teeth, but the x-ray had disclosed no pus pockets in their roots nor in the hollow bones of the face; he had adenoids and trouble with the turbinate bones of the nose (which were to be attended to shortly); he had a "white" count of 16,000, but curiously enough never an eosinophilia above six per cent. The outbreak was periodic, but consistently of the multiform rather than the herpetiform type, and always most picturesque and most strikingly symmetrical. Occasionally there was an isolated bulla, perhaps one-half inch in diameter, but the essential lesion was a macule. These round macules appeared, for the most part, on the trunk, and soon developed a raised, probably microscopically vesicular, red periphery. Then arose rapid, eccentric growth, so that in a few days a most extraordinary picture was formed, and the whole torso was covered with these now huge circles and polycyclic figures where coalescence had occurred. Such an attack would require perhaps two to three weeks for the completion of its cycle, and was not apparently influenced, and certainly not prevented, by arsenic. Sulphur ointment externally would unquestionably, where applied, check the growth of the otherwise rapidly spreading circles, but in the dry atmosphere of winter such treatment caused painful desiccation and furfuration of the skin and had to be abandoned.

8. NAEVUS VASCULARIS.

The patient presented a "port-wine mark" over the whole right side of the face. This was at first treated in several areas with radium, but the effect produced was not very satisfactory. Then Dr. Oliver had used the Kromayer lamp, one application of forty minutes, and as a result there was a distinct paling in this treated area, although the height of the improvement had not yet been reached.

Dr. Oliver was asked how much reaction he got, and replied, "Not more than a very severe sunburn, a subsequent blister for three or four days. The reaction does not appear until the next day, or at the earliest, in six hours."

9. LYMPHANGIOMA CIRCUMSCRIPTUM.

A young girl presented over and in front of her right shoulder band-like groups of very delicate, superficial, elevated, vesicular chambers, pinhead in size, some yellow and translucent, others purple-red and opaque, suggesting the individual elements of thimble-berries. From neither type could one express the fluid or the color. The lesions appeared two to three years after birth, but remained quiet until puberty. At first the patient was treated with CO_2 snow with rapid and marked success, but as she objected to the ensuing reaction radium was tried. This method proved effective but, of course, was slower; but as the patient preferred this treatment it was pursued, and the process was slowly disappearing under the radium exposures. It is worth recording in this instance that the areas treated by artificial snow showed a tendency to recur, while those subjected to radium had been absolutely cured.

10. DERMATITIS HERPETIFORMIS.

An excellent example of the long continued, grouped, papular type, where one never sees a vesicle, but where the chronicity and periodicity and seeming incurability are noteworthy, and where the typical recurring leukocytosis and eosinophilia are well pronounced.

11. LICHEN PLANUS.

A very perfect example of the disease in a much overworked and mentally harassed woman of sixty. The eruption was remarkable for its great abundance and its unusual chronicity and tenacity. Several doctors had treated the patient with all the known and recognized "specifics," but the eruption had failed to yield one iota to this well directed therapy.

12. DERMATITIS HERPETIFORMIS. PRESENTED FOR DR. BUFFORD BY DR. BLAISDELL.

Duration, four years. Patient has had eight successive attacks of the disease during this time, with intervals of several weeks between the outbreaks. Today, he shows over the entire body typical, grouped lesions consisting of vesicles, ruptured and unruptured, on erythematous bases; there is also a great deal of crusting and excoriation. This patient has had two strongly positive Wassermann tests at intervals of four months, but denies syphilis both by history and symptoms.

At the close of the meeting Dr. T. W. Thorndike gave a lantern demonstration of congenital syphilitic bones as revealed by the x-rays, and exhibited a Greek leper from the Boston Detention Hospital.

Charles J. White, *Secretary*.

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THE EFFECT OF WAR UPON AN ARMY MEDICAL CORPS.

ON March 9 of this year we commented in these columns upon the hearings before the Military Committee of the House of Representatives. In regard to the testimony of General W. C. Gorgas before this Committee, in which he asked for seven medical officers for every 1000 enlisted men, the Washington, D. C., *Herald* says. "In reply to this argument, the Senate conferees cite the fact that none of the European armies previous to the war had over four medical officers to a thousand enlisted men."

The writer in the *Herald* does not mention the fact that England has had to strip her home territory to supply the army with medical officers and to call on the United States in addition. He does not mention the fact that the Surgeon-General of the French army called to the attention of the French general staff that the army was very short of medical officers, and that he was unwilling to accept the responsibility for the results unless the numbers he called for were allowed him. Both of these facts were available in the quotations from British and French sources given at the hearing.

The quotations from the report of the Sanitary Committee of the French Chamber of Deputies concerning the conditions existing in the French army in 1913-14, the report being made to the Chamber by M. LaChaud, the chairman of the Committee, show conditions that should not have been possible in any army, and this at a time when the line officer of the French Service was preparing for the present war. The war following very soon, this protest smouldered until August, 1915, when it broke into flame in the French Chamber of Deputies and Senate. This apparently had considerable influence in the defeat of the French Ministry in the fall of 1915.

The Freycinet Commission, which was appointed by President Poincaré in 1914 and which had taken an active part in this protest, was re-formed and two of its members taken into the new ministry (M. M. Freycinet and M. Bourgeois). The reports of these Commissions and the discussions in the Chamber of Deputies show the results which follow neglect of the sanitary side of army questions and the necessity for careful study of these problems in time of peace in preparation for the difficulties of war.

On page 638 of the Committee Report, paragraph 4, General Gorgas says:

"It is always an easy matter during the actual period of hostilities to obtain legislation for increasing the various branches of the military establishment; but to increase a technical staff like the Medical Corps when war becomes imminent, or after it has begun, does not meet the actual needs of the situation, for the new men entering the corps from civil life, while they may be wholly competent as practitioners of medicine and surgery, are without the special training necessary to enable them to solve the problems of medico-military administration and properly to perform the duties of the medical officer."

We were much pleased to note that H. R. No. 2766 (the Hay bill) calls for 7 medical officers per 1000 enlisted men, as recommended by General Gorgas. We sincerely hope that the conferees will allow this provision to remain in the law. It is quite evident by the history of the present war that they and more will be needed once the United States becomes involved in war.

For the United States deliberately to calculate on receiving the charity of its citizens is unworthy of a great nation. The United States should prepare as deliberately for the care of its sick and wounded as it does for the destruction of its enemies. We do not agree with Miss Boardman when she says, on page 1222, *"Mr. Chairman, in war it is impossible for the medical service of any army, however efficient, to meet the demands that will be made upon it."*

The United States should make provision for the care of its sick and wounded in any future wars in such a way as to render a criticism of its attitude impossible, no matter how just such a criticism of its past positions may be.

PREDISPOSING CAUSES OF TUBERCULOSIS.

For a practical people such as we Americans are supposed to be, perhaps the most certain way of arousing public interest in questions relating to the health of the laboring classes is to tell how much it costs the State to care for the victims of advanced disease. We are beginning to appreciate the fact that the expenditure of comparatively small sums in prevention may save much greater amounts in the long run. Information upon this most important aspect of medicine is accumulating, and gradually, here and there, appear evidences of progress.

An excellent study along the line of preventive medicine has been carried out by Robinson and Wilson of the United States Public Health Service.* These investigators, at the request of the Board of Health and the Anti-Tuberculosis League of Cincinnati, undertook a survey of conditions in that city to determine, if possible, the reason for the abnormally high death rate from tuberculosis. The research consumed more than one year; 19,932 employees from 38 industries were examined and 154 establishments were inspected. Analysis of the predisposing causes of tuberculosis was made in cases of that disease found among employees, in those reported to the board of health and among inmates of the municipal tuberculosis hospital. This analysis was supplemented by a general survey of housing and economic conditions, of climatic conditions, of the prevalence of other diseases as a predisposing cause, and of the character and rate of growth of the population.

The report contains so many interesting and valuable observations that it is difficult to choose particular ones for comment. The analysis of predisposing causes most in evidence in 442 cases of tuberculosis investigated is instructive: Cases in which there was a history of tuberculosis in the family, 32.4%; cases in which poverty and poor housing were most in evidence, 9.7%; cases in which alcoholism, venereal disease and excesses were most in evidence, 10.8%; cases in which other diseases and injuries were most in evidence, 8.4%; cases in which occupation hazard or working conditions were most in evidence, 18.1%; cases in which none of the foregoing factors was in special evidence, 20.6%.

Infection from a member of the family is seen to be a very frequent cause of the disease. To prevent this, the writers urge sanatorium treatment for early cases, segregation for open cases, and the education of the family in prophylactic measures. They consider the consumptives who frequent cheap lodging houses the most dangerous class, and advise their frequent medical examination and segregation. In regard to the predisposing causes found in industries, the writers found that marble and stone workers run the greatest risk of developing tuberculosis. They believe, however, that "in the majority of instances the hazard was not inherent in the occupation itself, but was due to the bad hygienic and sanitary conditions obtaining." Housing conditions and poor economic conditions generally appear to be responsible for a larger percentage of cases than would be suggested by the table. These factors enter into the problem of tuberculosis in a large proportion of the cases, even when a more definite predisposing cause can be found. The recommendations which follow this report seem to us so sane and so practicable that we print them in full:

They are:

"1. Erection of a sanatorium for the treatment of incipient cases.

2. Increased segregation of advanced cases, and their detection by frequent medical examination of lodging-house inmates.

3. A more strict surveillance over families in which tuberculosis exists, by employment of all-time physicians for making frequent visits and medical examinations of other members of the family.

4. Institution of measures whereby a more

* Tuberculosis Among Industrial Workers, Public Health Bulletin No. 73, March, 1916.

accurate knowledge can be had of the whereabouts of all reported cases, by the passage of an ordinance by which the city authorities are kept informed of the removals of all families and perhaps some form of colonization of the lodging-house class.

5. By having accurate records of all removals, the disinfection of houses and rooms can be more thoroughly carried out, and by using mechanical cleansing and scrubbing with antiseptic solutions will be more efficiently performed.

6. Increased detection of both incipient and advanced cases by medical examination of industrial workers, either by physicians from the health department or physicians employed jointly by the manufacturers and workmen.

7. Improvement in sanitary and hygienic conditions in many work places, especially as regards ventilation, time and manner of cleaning floors, toilets and wash rooms, and promiscuous spitting.

8. Institution of State industrial insurance, by which the worker can obtain the necessary medical relief, rest, etc., and the family be provided for while the remedial measures are being carried out.

9. The improvement of home conditions by providing sanitary homes in the suburbs, with reasonable rent and cheap and rapid transit between these homes and the work places.

10. Revision of the building code, with more rigid requirements in regard to old houses and converted tenements and placing tenement house inspection under the health department, with an increase in the number of inspectors."

INDUSTRIAL HEALTH INSURANCE.

IN the issues of the JOURNAL for January 6, February 24 and April 6, 1916, we have commented editorially on the general subject of compulsory industrial health insurance and, in particular, on a bill, fostered by the American Association for Labor Legislation, which has been under consideration at the present session of the Massachusetts General Court. Whatever the opinion upon the general provisions of this bill, it appears that its phraseology is not yet satisfactory, and a new draft of the measure has been suggested, printed and recently circulated. In this draft the particular attention of physicians is directed to Sections 8 to 14 inclusive, the text of which at present has been revised as follows:

"Sect. 8. *Beginning of Right.* Insurance, with the exception of maternity benefits, begins with the day of membership. The maternity benefits shall be payable to any woman insured against sickness for at least six months during the year preceding the confinement, or to the wife or widow of any man so insured.

"Sect. 9. *Medical, Surgical, and Nursing Attendance.* All necessary medical, surgical and nursing attendance and treatment shall be furnished by the carrier from the first day of sickness during the continuance of sickness, but not to exceed twenty-six weeks of disability in any consecutive twelve months. In case the carrier is unable to furnish the benefit provided for in this section, it must pay the cost of such service actually rendered by competent persons at a rate approved by the Commission.

"Sect. 10. *Medical Service.* The carriers, subject to the approval of the Commission, shall make arrangements for medical, surgical, and nursing aid by legally qualified physicians and surgeons, and by nurses or through institutions or associations of physicians, surgeons, and nurses. Provision for medical aid shall be made by the carriers by means of either:

"1. A panel of physicians to which all legally qualified physicians shall have the right to belong, and from among whom the patients shall have free choice of physician, subject to the physician's right to refuse patients on grounds specified in regulations made under this act; provided, however, that no physician on the panel shall have on his list of insured patients more than 500 insured families nor more than 1,000 insured individuals;

"2. Salaried physicians in the employ of the carriers, among which physicians the insured persons shall have reasonable free choice;

"3. District medical officers, engaged for the treatment of insured persons in prescribed areas;

"4. Combination of above methods.

"Sect. 11. *Medical Officers.* Each carrier shall employ medical officers to examine patients who claim cash benefit, to provide a certificate of disability, and to supervise the character of the medical service in the interests of insured patients, physicians, and carriers.

"Sect. 12. *Medical and Surgical Supplies.* Insured persons shall be supplied with all necessary medicines, surgical supplies, dressings, eyeglasses, trusses, crutches and similar appliances prescribed by the physician, not to exceed $50 in cost in any one year.

"Sect. 13. *Hospital Treatment.* Hospital or sanatorium treatment and maintenance shall be furnished, upon the approval of the medical officer of the carrier, instead of all other benefits (except as provided in Section 16), with the consent of the insured member, or that of his family when it is not practicable to obtain his consent. The carrier may demand that such treatment and maintenance be accepted when required by the contagious nature of the disease, or when in the opinion of its medical officer such hospital treatment is imperative for the proper

treatment of the disease or for the proper control of the patient. Cash benefit may be discontinued during refusal to submit to hospital treatment. Hospital treatment shall be furnished for the same period as cash benefit. This benefit may be provided in those hospitals with which the funds and societies have made satisfactory financial arrangements which have met the approval of the Social Insurance Commissioners, or in hospitals erected and maintained by the funds and societies with the approval of the Commission.

"Sect. 14. *Arbitration Committee.* All disputes between the insured and physicians, or between friends and physicians, concerning medical benefits shall be referred to special committees composed of representatives of the interests concerned, with an impartial chairman appointed by the Commission, with an appeal to the Commission."

There is little to add to our previously expressed editorial opinion on the general aspects of this subject. Legislative action upon it is unlikely to be taken during the present season. A careful consideration of the provisions of the bill as relating to the medical profession is, therefore, earnestly urged upon all physicians in order that they may be prepared to form judicial opinions prior to the reopening of the subject in the next legislature.

RECENT MEDICAL LEGISLATION.

In the JOURNAL for May 4, 1916, we commented editorially upon the resolution introduced by Senator Works of California, which states that inasmuch as the American Medical Association is a national organization of physicians and surgeons of one school of medicine only, whereas the Public Health Service of the United States is intended to represent all classes of people, of all medical or non-medical beliefs, in national and interstate affairs, "Be it resolved by the Senate and House of Representatives of the United States of America, in Congress assembled, that it shall be unlawful for any officer or employee of the Public Health Service of the Government to be or become a member or officer of, or in any way connected with, any medical or private health association or organization of any kind."

It is difficult for those of us of the "one school of medicine" represented by the American Medical Association to characterize by any other term than absurd this resolution of Senator Works. One need only to point out that the present Public Health Service of the United States, the quarantine laws, control of epidemics, sanitary regulations and the passage of laws aimed at the securing of pure food, including milk—in short, all the laws of hygiene and sanitation—are the result of the activities of those who have believed as the "one school of medicine" has believed. In seeking to divorce the interests of the Public Health Service and the great body of "regular" physicians, Senator Works really repudiates all of the advances hitherto made in the cause of public health.

This resolution is now before the Committee on Public Health and National Quarantine, of which Senator Weeks of Massachusetts is a member. We cannot believe that this committee will report favorably such an iniquitous piece of legislation.

THE TESTING OF VISION AND HEARING IN THE PUBLIC SCHOOLS.

In the issue of the JOURNAL for May 25 we published a report by Dr. William H. Devine, director of medical inspection in the Boston public schools, on physical examinations of pupils made in these institutions during the past winter. In another column of the present issue of the JOURNAL we publish a further communication from Dr. Devine on the tests of vision and hearing made in the Boston public schools during the decade 1907 to 1916. The statistics for this period are presented in tabular form, noteworthy points being the decline in the percentage of defective vision, and especially of defective hearing during this decennium. Attention is called to these important and interesting results of a valuable work in child welfare which is the direct outgrowth of medical inspection.

MEDICAL NOTES.

MEDICAL MEETINGS AT DETROIT.—The sixty-seventh annual session of the American Medical Association is to be held at Detroit, Mich., next week from June 12 to 16, and in conjunction with it the sessions of its fifteen scientific sections and of several non-affiliated organizations. Among the latter may be noted particularly the

forty-first annual meeting of the American Academy of Medicine, from June 9 to 12, and the eighteenth annual meeting of the American Proctologic Society on June 12 and 13. Complete announcement and programs were published in the *Journal of the American Medical Association* on May 6, to which members of the Massachusetts Medical Society and other physicians purposing to attend any of these meetings are referred. The subjects for special consideration by the American Academy of Medicine are the relation of legislation to the practice of medicine, and the relation of the science of medicine to legislative enactment.

PHYSICIANS FOR SERVICE IN CHINA.—On May 5, an appeal was issued by the Chinese Medical Board to the medical profession of Philadelphia to supply fifty physicians and surgeons for immediate service at hospitals in China. It is believed that the furnishing of this unit will be undertaken by the College of Physicians of Philadelphia.

TRELOAR CRIPPLES' HOSPITAL AND COLLEGE.—The recently published first medical report of the Treloar Cripples' Hospital and College at Alton, Hampshire, England, presents a record of the work of this institution by its medical superintendent, Dr. H. J. Gauvain. There is an introduction by Lord Moulton descriptive of the origin and purposes of the Hospital. The report is well illustrated with fifty-two figures representing aspects in the treatment of orthopedic cases. In conclusion it presents a review of the work of the Hospital from its foundation in September, 1908, until March 31, 1915. During this time, 1267 patients were admitted of whom 506 had tuberculous disease of the spine and 435 of the hip.

BUBONIC PLAGUE IN INDIA.—During the week ending February 5, there were in the whole of India 6628 deaths of bubonic plague. Bombay Presidency and Sind and the United Provinces account for 1721 and 1628, respectively. Other provincial figures are: Madras Presidency, 431; Bengal, 3; Behar and Orissa, 602; Punjab, 65; Burma, 350; Central Provinces, 703; Mysore State, 162; Hyderabad State, 874; Central India, 80; and Kashmir, 6.

BRITISH MEDICAL GIFTS.—It is announced that Mr. Arthur du Cros of Hastings, England, has made a gift of £7000 to the extension fund of the London School of Medicine for Women, completing the fund of £30,000 needed for endowment.

It is further announced that Sir Alexander R. Simpson, formerly professor of obstetrics at the University of Edinburgh, has bequeathed the museum of his uncle, the late Sir James Young Simpson, discoverer of chloroform as an anesthetic, to the University of Edinburgh.

NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS.—The first annual report of the National Committee for the Prevention of Blindness, recently published, covers the work of that organization and includes the seventh annual report of the New York State Committee for the Prevention of Blindness. The Committee states that it represents a need strongly felt in many sections of the United States for a bureau of information and advice, and for leadership in the movement for the conservation of vision. The organization of the society consists of a board of thirty directors with a managing director as executive officer. A secretary and a field secretary carry on the active work.

"The secretary, Miss Van Blarcom, has kept in touch with the workers for control of inflammation in the eyes of the new-born, that cause of needless blindness which has been credited with responsibility for more than one-fourth of the loss of vision of children; and by correspondence and articles in the daily and other periodical press, as well as by personal service in public lectures and private conferences, has contributed to the efforts constantly being made to eradicate it. In like manner she has labored for the elimination of blindness by poisoning from wood alcohol and for the improvement of the status of midwifery.

"The field secretary, Mr. Berry, has made special studies in the work of preventing blindness from trachoma and from eye injuries in the industries, and in the field of faulty and harmful illumination. He, too, has conducted a large correspondence and rendered personal services, the latter more particularly in the states of Kentucky, Tennessee, and North Carolina. Publications of the Society have reached a circulation of 50,000 copies, and other facilities for educational propagandism have been liberally used; they are in intimate touch with work in a score of states and especially close to that in five of them.

"While an integral part of the National Committee, the New York State Committee for the Prevention of Blindness maintains its identity and confines its attention to its specific field. The financial support of the State Committee's work is a part of the expenditures of the National Committee."

BIRTH OF CAESAREAN TRIPLETS.—Report from Omaha, Neb., states that on May 18, a resident of that city, wife of a local farmer, was delivered of living triplets by Caesarean section. The patient was a primigravida, 23 years of age. The children are all boys and are said to appear vigorous. Their weights are not stated. It is believed that this is the first reported instance of the birth of Caesarean triplets. We are not yet informed whether the diagnosis of multiple pregnancy was made prior to operation.

American Society for the Control of Cancer.—The annual meeting of the American Society for the Control of Cancer was held in New York City on May 18. The following officers were elected for the ensuing year: Dr. George C. Clark of New York, president; Dr. Llewellys F. Barker, Baltimore; Dr. Arthur Kean Beavan, Chicago; Dr. Lewis W. McMurtry, Louisville, and Dr. Edward Reynolds, Boston, vice-presidents; Thomas M. Debevoise, New York, secretary; Howard Bayne, New York, treasurer, and Curtis E. Lakeman, New York, executive secretary.

The following new directors of the society, in addition to those now serving, also were elected: Professor C. E. A. Winslow, New Haven, Conn.; Dr. Charles J. Hastings, Toronto; Dr. M. F. Engman, St. Louis; Dr. Robert B. Greenough, Boston; Dr. Joseph Ransohoff, Cincinnati, and Dr. Palmer Findley, Omaha.

Typhus Fever in Texas.—In the weekly report of the United States Public Health Service for May 19, it is stated that between March 18 and May 1, a total of 41 cases of typhus fever had been reported in El Paso, Texas, 15 at Laredo, Texas, and 3 at Conejo, Texas. During the same period there also occurred 6 cases of the disease in New Mexico and 3 in Arizona.

EUROPEAN WAR NOTES.

Cholera and Typhus in Hungary.—Report from Austria-Hungary on May 19, states that during the week ended April 1, 1916, two cases of typhus fever occurred in Budapest. Sporadic cases of Asiatic cholera have also occurred in this city during the winter, the last two fatal cases having been in January. Recrudescence of cholera is to be expected during the summer season. Sporadic cases of typhus fever have also occurred in several of the German prison camps, the largest number of cases being thirty-seven in Saxony, and twenty-one at Königsberg during the first quarter of 1916.

Medical Aspects of the Dublin Revolt.—Recently received issues of the English medical journals contain graphic accounts of the medical aspects of the Dublin revolt of April 24, particularly as it affected the work of the ten general hospitals which were supplemented by the military hospital and the Dublin Castle Red Cross Hospital.

"Many medical men were absent for a brief holiday when the outbreak occurred, but most of them took whatever means was in their power to return to what they considered their post of duty. As no trains were running into Dublin the journey had to be made by motor-car, or, in some cases, by relays of post-car. Most of those who were in Dublin on Easter Monday lost no time in getting to their various hospitals, where they remained without intermission or release until the following Saturday. Transit through the streets during the week was in all cases dangerous, and in many impossible. One hospital was invested by the insurgents, who kept several members of the staff as prisoners, carrying in their wounded for treatment and removing them immediately, whatever their condition. From Monday to Saturday the various medical staffs worked almost incessantly; the house of the College of Surgeons of Ireland in St. Stephen's Green was made to serve as the chief ambulance dépôt or hospital of the insurgents. A number of wounded were also taken to the Royal City of Dublin Hospital in Baggot Street, which runs into St. Stephen's Green. The first serious street fighting took place on Tuesday, April 25th, at the corner of Pembroke and Lansdowne Roads, where the rebels had seized a doctor's house, from which the troops coming from Kingstown were fired on. When the house was captured in the evening the bodies of nineteen Sinn Feiners were found within. On the same day the insurgents seized an ammunition shop, from which they had Trinity College under close and direct fire. The College was occupied by soldiers, and on Wednesday, April 26th, a field gun was brought to the roof of the College and the ammunition shop blown to pieces. In spite of all this, a term examination was carried on with the usual exactness within the walls of the College. The house of the College of Surgeons seems to have been one of the last buildings held by the insurgents, and on April 30th, there were some 200 wounded men in the building.

"It is impossible to suggest any estimate of the number of casualties dealt with during the week. Some two hundred and fifty dead bodies lay in the hospitals at the end of the week, and there were probably at least as many more outside. The casualties must have run into thousands. The majority both of deaths and lesser casualties was probably among harmless civilians who had the misfortune to be resident in the neighbourhood of the strongholds of the insurgents."

No fatalities were reported among medical officers, but two surgeons, Major Black and Captain McCullagh, both of the Royal Army Medical Corps, were severely wounded while in the discharge of their duties.

Percentage of Recovery Among German Troops.—Report from Berlin, by Dr. von Schjerning, states that of sick and wounded soldiers treated in the German field hospitals, 86.6 per cent. are able to return to service, and of those treated at base hospitals in Germany, 90.1 return to service. The death rate is stated to be only 1.5 per cent. of wounded and sick. The total number of army nurses engaged in active service is 6800.

COST OF DRUGS IN ENGLAND.—In conjunction with the nominal increase in the cost of drugs in the United States since the outbreak of the war, it is interesting to note the corresponding increase in the cost of drugs in England. The following table indicates how many times more expensive twenty commonly prescribed drugs now are in that country than before the war.

Phenacetin	26	Salicylic acid	20
Permanganate of potash	27	Chlorate of potash	7
Aspirin	25	Cocaine	7½
Antipyrine	12	Quinine	3
Potassium bromide	16	Veronal	3
Cod liver oil	11	Sulphonal	5
Antifebrin	11	Citric acid	2
Thymol	3½	Tartaric acid	3¼
Cream of tartar	2	Calomel	2½
Carbolic acid	6	Caffeine	3½

"In most cases the cause of these remarkable advances is that before the war, England was almost entirely dependent upon Germany for its supply of such popular drugs as phenacetin, aspirin, antipyrine and so on. A few of them are now being made in Great Britain, but the raw materials from which they are manufactured are in many cases used for the production of explosives, the quantity available is severely restricted, and prices consequently remain at a high level."

SHIPMENT OF SALVARSAN FROM GERMANY.—Report from New York states that on May 25, a shipment of salvarsan valued at $500,000 was received in that port from Germany. This shipment is the first to enter this country since the outbreak of the war, and its arrival is the result of negotiations between the United States Department of State and the German government. The latter issued a special order directing the shipment, and the consignment of the drug was sent through Holland and transported on a Dutch steamer under assurance from the British and French governments that it should not be confiscated.

APPEAL OF SURGICAL DRESSINGS COMMITTEE.—The surgical dressings committee of the National Civic Federation has recently issued the following appeal for additional funds to enable the continuance of its work in preparing surgical supplies for the Allied army.

"The work of the Surgical Dressings Committee, which more than a year ago began to send sterilized surgical dressings abroad for wounded soldiers of the Allied armies, has, in the past winter, quite outgrown all expectations. That the dressings are excellently prepared, and that the affairs of the committee are managed economically and efficiently, are testified to by the eminent surgeons and financiers whose names follow. With constant additions to the branches through New England, under the Surgical Dressings Committee, the demand for dressings more than keeps pace, and the committee, determined not to disregard these demands of suffering humanity, makes the following appeal to the public for further financial support:

"To provide for the continuance of our work—the sending of surgical dressings to the war hospitals of the Allies, the demand for which is constantly increasing—we appeal for further funds.

"To justify this appeal we print the opinions of our surgeons' advisory committee and of our financial advisers:

"We have no hesitation in indorsing the work of the Surgical Dressings Committee. The dressings made are always of the first order of excellence, and, as some of us know from personal experience, are perfectly adapted for use in the war hospitals abroad.

"Harvey Cushing, M.D.,
"John W. Elliot, M.D.,
"Robert B. Greenough, M.D.,
"Charles Allen Porter, M.D.,
"Hugh Williams, M.D.

"We have kept in constant touch with the financial affairs of the Surgical Dressings Committee, and are satisfied that the management is efficient and economical.

"George Wigglesworth,
"Walter C. Baylies,
"Arthur Adams.

"We are coöperating with the Red Cross and the Special Aid Society for American Preparedness in a number of ways—principally by teaching the making of surgical dressings. This coöperation increases the output, both for sending to the war hospitals abroad, and for possible use at home.

"Since October, the number of voluntary workers at our quarters in the Peter Bent Brigham Hospital, has increased to 740; and 87 branches throughout New England have been organized. In behalf of them all, we wish to thank those whose generosity has given them the opportunity to serve a cause with which they sympathize so keenly.

"Our shipments abroad of surgical dressings from Nov. 1, 1915, to May 1, 1916, have been 1,169,067, increasing from 96,962 in November to 251,155 in April.

"Checks should be made payable to the Surgical Dressings Committee, and sent to the Old Colony Trust Company, Boston.

"Surgical Dressings Committee, National Civic Federation, Women's Department, New England Section."

MENINGITIS AMONG BRITISH TROOPS.—During the past winter, cerebro-spinal meningitis has been considerably epidemic in certain camps of British and Canadian troops in England. Further data on this subject will appear in next week's issue of the JOURNAL.

War Relief Funds.—On June 3 the totals of the principal New England relief funds for the European War reached the following amounts:

Belgian Fund	$123,802.31
Allied Fund	113,787.67
French Wounded Fund	84,927.11
American Ambulance Fund	76,489.58
British Imperial Fund	56,569.04
French Orphanage Fund	52,354.08
Armenian Fund	43,195.53
Army Huts Fund	38,883.50
Polish Fund	35,905.21
Surgical Dressings Fund	32,008.67
Facial Hospital Fund	21,054.25
Italian Fund	18,222.56
French Refugees' Fund	12,241.50
Cardinal Mercier Fund	6,542.50
Belgian Tobacco Fund	2,495.18

BOSTON AND NEW ENGLAND.

The Week's Death Rate in Boston.—During the week ending June 3, 1916, there were 239 deaths reported, with a rate of 16.39 per 1,000 population, as compared with 208 and a rate of 14.49 for the corresponding week of last year. There were 35 deaths under 1 year, as compared with 27 last year, and 74 deaths over 60 years of age, against 71 last year.

During the week the number of cases of principal reportable diseases were: Diphtheria, 60; scarlet fever, 42; measles, 271; whooping cough, 28; typhoid fever, 3; and pulmonary tuberculosis, 47.

Included in the above were the following cases of non-residents: Diphtheria, 17; scarlet fever, 16; measles, 1; and tuberculosis, 10.

Total deaths from these diseases were: Diphtheria, 3; scarlet fever, 4; measles, 4; whooping cough, 1, and pulmonary tuberculosis, 24.

Included in the above were the following deaths of non-residents: Diphtheria, 1; scarlet fever, 2; tuberculosis, 1.

Workmen's Compensation and Social Insurance.—Before adjourning, June 2, the Massachusetts Legislature appointed the following Recess Committee to consider Workmen's Compensation insurance rates: Senators Cavanagh of Everett, Jackson of Lynn, and Sheehan of Holyoke, with Representatives Kennard of Somerville, Abbott of Haverhill, Faxon of Fitchburg, Kent of Pittsfield, Sullivan of Ward 19, Boston, and Garrity of Worcester. Also the following Recess Committee to consider Social Insurance: Senators Farnsworth of Leominster, and McLane of Fall River, with Representatives Catheron of Beverly, Bowser of Wakefield, Woodill of Melrose and Morris of Ward 15, Boston.

Massachusetts Hospitals for Consumptives.—The ninth annual report of the trustees of Massachusetts Hospitals for Consumptives states that it is the intention ultimately to conduct four sanatoria for the active treatment and arrest of early and favorable cases of pulmonary tuberculosis. This ideal can be attained only when there are enough beds in municipal tuberculosis hospitals, so that the trustees no longer have to give so much consideration to the question of segregation of the open cases of tuberculosis, and the protection of the public as they do at present. With the exception of the Rutland State Sanatorium, it has been the custom to admit patients in all stages of the disease, but with the increased number of beds in use in local tuberculosis hospitals, the time has come when the Board feels that more discrimination should be used in the selection of patients for the State Sanatoria and that the institutions at North Reading, Lakeville, and Westfield should be sanatoria in fact as well as in name. The daily average number of patients at the North Reading State Sanatorium has been 198, that at Lakeville 256, at Westfield 254 and at Rutland 349. The waiting list for all four sanatoria is long,—about 400 names at the present time,—which is significant, not of the increase of tuberculosis, but owing to the establishment of local dispensaries and other activities, that more cases than heretofore are being diagnosed and are seeking sanatorium treatment.

Gift to Winchester Hospital.—The cornerstone of the new Winchester (Mass.) Hospital was laid with appropriate ceremony on May 18, and on this occasion announcement was made of a gift to the Hospital of $50,000 from Mr. George Harrington, a resident of the town. The conditions of the gift are that the Hospital shall receive the interest on this sum for two years and that at the end of that time, if the present mortgage of $15,000 has been paid, the entire sum of $50,000 shall be transferred in absolute gift to the trustees. The total cost of the Hospital is over $67,000. The building will contain two wards, each for eight patients, a number of private rooms, an operating room and an obstetric department.

Epidemic of Tonsillitis in Watertown.—There has recently occurred in Watertown, Mass., another epidemic of a type with which the medical profession has become more familiar in recent years, of streptococcic tonsillitis, which in this instance appears to have been milk borne. There were in all over 40 cases with two fatalities. The infection was traced, on May 20, to a single milk route upon which all the cases had occurred. A cow supplying milk to this dealer was found to have a septic ulceration of the udder. The cow was slaughtered and the same streptococcus was recovered from this ulceration as from the tonsillar lesions of the human patients. The epidemic, which is now controlled, is to be investigated by Dr. David L. Edsall whose further definite report will determine the accuracy of the above unofficial statement.

BOSTON CITY HOSPITAL TRAINING SCHOOL.—The graduating exercises of the Training School for Nurses of the Boston City Hospital were held in the surgical out-patient building on Friday, May 26, at 4 o'clock. A reception was held in the Vose house from five to six of the same day.

WORCESTER CITY HOSPITAL.—The report of the Worcester City Hospital for the year ended November 30, 1915, has been recently published. It records a total number of 1,884 patients treated in the surgical wards, and 1,752 in the medical wards. The number of children admitted was 645. There were admitted to the maternity service 551 patients, and to the out-patient department 7000 new patients. The training school for nurses graduated 30 pupils, and 94 probationers were received during the year. The pathological department continues to be one of the important departments of the Hospital. Surgical specimens to the number of 548 and bacteriological cultures to the number of 891 have been examined for diagnosis. One thousand four hundred and forty Wassermann tests for syphilis have been performed and, with the beginning of 1916, by arrangement with the Board of Health, free Wassermann and Schwartz tests are offered to the physicians of Worcester.

REGISTRATION IN DENTISTRY.—At the continued March examination of the Massachusetts State Board of Registration in Dentistry, 25 more candidates were passed, in addition to those announced on the earlier list.

NEW HAMPSHIRE MEDICAL SOCIETY.—At the annual meeting of the New Hampshire Medical Society at Concord, N. H., on May 16, the following officers were chosen for the ensuing year: Dr. Emden Fritz of Manchester, president; Dr. Fred S. Towle, Portsmouth, vice president; Dr. Dennis E. Sullivan, Concord, secretary; Dr. D. M. Currier, Newport, treasurer.

THE CHILDREN'S HOSPITAL.—The Children's Hospital, in its recently published forty-seventh annual report, records the work of that institution in its first year of occupancy of the new hospital buildings. In statistics the growth of service is presented as follows: the patients admitted to the wards have increased 1,296, 74%; the operations have increased 690, 42%; the attendance of out-patients has increased 15,000, 55%; and the social service department has gained 99% in new cases and 32% in the total number of visits made.

The Convalescent Home at Wellesley Hills has completed its thirty-first year of establishment and is continuing to maintain itself as an important part of the Hospital. The number of patients treated was 530, with a daily average of 55, and these figures would be higher had there not been several cases of scarlet fever at various times, necessitating periods of quarantine.

The managers have voted to establish a system of subscription beds, by which a subscriber of $100 may for one year, subject to the rules and regulations of the Hospital, nominate one patient at a time to one of said beds.

The large increase in the demands made upon the Children's Hospital since moving into the new building is such that this year a deficit of about $65,000 was faced.

This threatened deficit was more than met by the generosity of certain persons as the result of a special and earnest effort on the part of a sub-committee.

The normal annual receipts from the public in donations have been between $10,000 and $12,000. The problem is to increase this yearly amount to $60,000, and the managers earnestly appeal to the generosity of the community to support an institution which does so much for so many children, and by its increasing use proves its necessity.

BOSTON STATE HOSPITAL.—The seventh annual report of the Boston State Hospital records the work of that institution and its department, the Psychopathic Hospital, for the year ended November 30, 1915. At the beginning of the year, 1,472 patients were under the care of this Board, of whom 1,374 were in the main hospital and 98 were at the psychopathic department. At the close of the year the number of persons for whom the hospital was responsible had increased to 1,609, of whom 1,498 were at the main hospital, 100 at the psychopathic department, and 11 were in the care of private families, the trustees having assumed during the year, at the request of the State Board of Insanity, the care of patients who had been placed with private families. The cases in the main hospital, never before in any hospital for the insane, numbered 1,008. Concerning this group of first admissions, the following facts are noted, in accordance with custom: Four hundred sixty-nine, or 46.5%, were foreign born, and 718, or 71%, were of foreign parentage on one or both sides. The average age on admission was 43.2 years. Seventeen per cent. were 60 years of age or over, and 15 patients were over 80 years old. The probable cause of the mental disease was recorded in 513 of these cases; the cause was unascertained in 495. Of ascertained causes the principal ones were: senility and arteriosclerosis, 139 cases; syphilis, 133 cases; alcohol, 124, in which it was the exciting cause, besides 35 in which this was a contributory or predisposing factor. At the psychopathic department the native-born (1099) were found to exceed in numbers the foreign-born (854); the birthplace of 48 was unknown. The average age on admission was 36.9. Of the discharges, 673 were discharged not recovered, 508 not insane, 96 recovered, 51 dead.

Obituary.

WILLIAM PALMER BOLLES, M.D.

THE following memorial to DR. WILLIAM PALMER BOLLES was read at a meeting of the Dorchester Medical Club. He was a devoted member of the Club from the time of his election in 1873 until his death, which occurred on March 18, 1916.

Dr. Bolles graduated from the surgical side of the Boston City Hospital in May, 1871, and the following month received his degree from the Harvard Medical School. Soon after graduation he was appointed to the staff of the Boston City Hospital, and served most faithfully in several positions until his death.

His professional interests were chiefly surgical, yet after the custom of his time, he never entirely relinquished his general medical practice. Even after his retirement from active practice many of his devoted patients refused to give him up. He was a careful surgeon, always keen in diagnosis, and most thoughtful of the after-treatment and the ultimate good of his surgical procedure. His skill was due to an unusual capacity for taking pains, the extraordinary deftness of his hands, and the fertility and ingenuity of his brain. During his most active years he contributed numerous articles to medical literature; he invented a fracture box, a salt solution bottle for irrigations, and a portable sterilizer, which was very useful when operations were performed in private houses.

Dr. Bolles had a passion for acquiring knowledge, and read unceasingly in many subjects. He was a skilful botanist, and in the few weeks he spent in Santa Barbara, just before his death, classified more than forty plants. At the time of his retirement from the professorship of *materia medica* and botany at the Massachusetts College of Pharmacy, he gave his collection of over two thousand botanical specimens to the college.

He was an expert craftsman and made beautiful articles in silver, copper and wood, many of which he gave to his friends. He believed every one should have an avocation, and often cautioned his young friends about the danger of growing old without one.

But last and greatest was his unvarying kindliness. He was a staunch and loyal friend, and thoroughly enjoyed having his friends about him. He was never too busy or hurried to give his helpful thought to others, and to assist them with their problems. A most delightful companion, whom one never left without feeling better for his instructive, entertaining, and often delicately humorous conversation, Dr. Bolles was a courtly gentleman, always thoughtful of the feelings of others and he believed the best of all men. His place in the Club will be taken by another, but he can never be supplanted in the hearts of his fellow members.

Miscellany.

REPORT ON TESTS FOR VISION AND HEARING IN BOSTON PUBLIC SCHOOLS.

1907 - 1916.

BY WILLIAM H. DEVINE, M.D.,

Director of Medical Inspection, Boston Public Schools.

FOR the past ten years the pupils in public schools have been tested annually by teachers for defects of vision and hearing. A careful survey of table will show results obtained. From 1907 to 1916 there was a steady decrease in the percentage of defective vision, 1916 showing a slight increase (fraction of 1%).

Practically the same may be said of defective hearing. In 1910, 1913, and 1915 there was a slight increase over preceding years.

The difference between figures of early and later years is so striking that it furnishes ample proof of the benefit derived in school life from annual testing. The defects in vision and hearing show the importance of special classes for those who have serious defects.

"Two classes for defective vision of those who are not institutional cases have been established. These are provided with expert teachers and an equipment especially designed for treating children who have some vision, though extremely defective. They are assembled in one center in Roxbury. There are twenty-two of these children, most of whom come from distant parts of the city, car fare being provided by the schools. They are distributed into seven classes, though most of the work has to be done individually. The pupils, with one exception, have better than one-tenth normal vision. These children have the attention of a special physician. An experienced oculist has oversight of the work, and two teachers, who have been trained at the Perkins Institute, give the instructions, which include the ordinary curriculum of the course of study, and especially adapted manual work.

"The deaf have good instructional opportunities at the Horace Mann School, with a staff of fifteen teachers and 144 children below high school grade. Although the building is overcrowded, the character of the work is exceptionally fine, and the teachers are among the most efficient and devoted in the entire city."—From Report of Dr. Franklin B. Dyer, Superintendent Public Schools, 1915.

In line with this, I quote from an article written by Mary Bronson Hartt, on "Foresight for the Sightless," *Boston Transcript*, May 20, 1916:

"Twenty-three hundred—maybe twice as many—wretched youngsters stumbling along in Massachusetts schools, accounted stupid, lazy, or even feeble-minded, kept back among children half their size, a burden to their classes, a de-

spair to themselves, because, poor infants, they are more than half blind. It doesn't better the case to realize that in the enlightened decades just behind us a little army of semi-sighted children must have struggled to maturity, cheated of an education altogether, or else, if mentally keen and strong of heart, must have fought their way to education of a sort at fearful cost to health and eyesight. Such defrauded children have swelled the ranks of the delinquent or the economically helpless, or if they have achieved independence have done it too often at the sacrifice of what sight they had, bringing up eventually among the totally blind.

"Since 1900, investigations have been making in Europe which ought logically to have resulted decades ago in special training for little "half blinds." Yet the special classes in London, Birmingham, Mulhausen and Strassburg were still young when Boston opened her semi-sighted class in the Little Wooden Schoolhouse in Thornton Street, Roxbury, three years ago this spring.

"It was Edward E. Allen, director of the Perkins Institute, who awakened Massachusetts. The growing proportion of half-sighted girls and boys applying for education at Perkins stirred him to appeal to the Commission for the Blind and the school authorities for relief,—not for Perkins, but for the youngsters themselves. It is, he contends, a serious mistake to give a child with partial sight the education planned for the blind, unless, indeed, his sight is going, and he must one day support himself without it.

"Mr. Allen felt that as these partial-sighted boys and girls can see to get about among normal people, it was most unwise to isolate them for their school days among the blind. The result of Mr. Allen's initiative was a joint effort of the school authorities, the Massachusetts Commission for the Blind and a group of Boston eye-specialists to establish a school where the most heavily handicapped of our semi-sighted children might be taken care of, and also the passing of a bill empowering the commission to investigate the vision of school children throughout the State."

When framing the law for the examination of vision and hearing by teachers contemplated, experts appointed by His Excellency, the Governor, stated that the teacher is qualified for testing vision and hearing. This opinion is confirmed by the results obtained in Boston schools. The teacher is in touch with the child, knows his capabilities and whims. She is not apt to mistake dullness of intellect, eccentricity or backwardness for a defect in vision or hearing. A course is given at the Boston Normal School on testing of vision and hearing.

After the completion of the testing of vision by the school teachers, the school nurses retest all the pupils reported defective. This retesting is done under the best possible conditions of light, and the number of cases found defective is considerably less than the number found by the teachers. During the school year 1915-16, out of 10,922 children retested, the number found normal was 4,044.

In testing the hearing of children, one person should make the examination for the entire school in order to insure an even method. The one selected should have normal hearing, and preferably be known to the children, the announcement of the examination often tending to inspire fear. The examination should be conducted in a room not less than twenty-five or thirty feet long, and situated in as quiet a place as available. The floor should be marked off with parallel lines one foot apart, the child sitting in a revolving chair on the first space. The two ears should be tested separately. Experience demonstrates that the method of testing vision and hearing by teachers and retesting by nurses is an efficient method. The following is issued at the beginning of every school year for the guidance of teachers:

"The annual testing of sight and hearing, as required by Chapter 502, Acts of 1906, should be made as early as possible in the school year. This will give the school nurses the data necessary to enable them to 'follow up,' earlier in the school year, each child found defective in sight or in hearing. You are requested to furnish the data on this examination, on the enclosed blank, not later than November 1, 1915. Each child found defective in sight or in hearing *should be referred to the school nurse for special re-testing by her* before the parent or guardian is notified that an examination by a specialist seems desirable. Copies of 'Directions for Testing Sight and Hearing,' issued by the State Board of Education, with other necessary material, may be secured at the Supply Room, Public Latin School. Your attention is especially directed to the following instructions issued by the State Board of Education:

"1. Children wearing glasses will be tested *with the glasses*, and if found normal, will be so recorded. Such children should not be tested without glasses.

"2. No child is to be recorded as defective in vision unless the vision is 20/40 or less in either eye.

"*Notification to Parents:*

"1. The parent or guardian is to be notified whenever the vision in either eye is found to be 20/40 or less. No notice will be sent when the vision is 20/20 in both eyes, 20/20 in one eye and 20/30 in the other, or 20/30 in both eyes. This includes vision with glasses.

"2. The parent or guardian is to be notified also when the examination shows that the eyes or eyelids are habitually inflamed; when there is constant complaint of pain in the eyes or head after reading or writing, especially toward the end of school hours; when one or both eyes deviate from the normal position—squinting—;

SUMMARY OF HEARING AND VISION TESTING.
1907 to 1916.

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	Total
No. of pupils tested in vision	83,000	82,555	82,954	84,068	84,747	83,075	87,493	89,508	91,326	92,552	860,577 (tests)
No. of pupils normal in vision	57,474	62,532	64,116	66,755	71,902	70,587	74,912	78,436	80,287	80,653	
No. of pupils defective in vision	28,435	19,723	18,838	17,303	12,845	12,488	12,581	11,070	11,039	11,899	
Per cent. of defective vision	31.50	23.97	22.70	20.58	15.15	15.03	14.37	12.36	12.08	12.86	
No. of pupils tested in hearing	83,000	82,555	82,944	85,343	86,065	83,075	88,788	91,529	93,024	92,415	860,347 (tests)
No. of pupils normal in hearing	77,080	75,926	78,815	80,589	82,050	79,800*	85,564	89,100	90,486	89,834	
No. of pupils defective in hearing	6,820	6,329	4,129	4,774	3,405	3,269	3,224	2,469	2,538	2,581	
Per cent. of defective hearing	8.13	7.69	4.94	5.30	3.60	3.60	3.63	2.7	2.5	2.79	
No. of pupils wearing glasses			8,595	6,831	6,385	7,673	5,950	6,027	5,754	5,941	
No. of pupils normal in vision with glasses			5,190	2,895	3,614	4,776	3,390	3,560	3,390	3,318	
No. of pupils defective in vision with glasses			3,345	3,996	2,771	2,897	2,560	2,458	2,435	2,623	
No. of pupils defective in vision not wearing glasses			15,493	13,337	10,073	9,591	10,011	8,614	8,604	9,276	
No. of pupils defective in both vision and hearing			1,866		1,061	1,092	1,533	712	588	726	
No. of pupils corrected in vision since last test			5,084	3,480	3,166	3,355	2,963	2,805	2,733	2,780	26,444
No. of pupils corrected in hearing since last test			1,213	875	694	644	585	487	358	354	5,160

The chart for the years previous to 1916 was prepared by Thomas F. Harrington, M.D., formerly Director of School Hygiene.

* First two grades not tested.

when the book is habitually held at less than one foot from the eyes; when there is constant scowling and evident effort in using the eyes.

"3. The parent or guardian should be notified of any evident degree of deafness; also of any discharge from the ear."

Correspondence.

IS THE GENERAL PRACTITIONER INCOMPETENT TO TREAT GONORRHEA?

CAMBRIDGE, MASS., May 26, 1916.

Mr. Editor: Another enemy to the general practitioner has taken the field. Just as the echoes of "Better Doctoring for Less Money" were beginning to die out, we are told by Dr. J. Dellinger Barney in "The Management of Gonorrhea," published in the JOURNAL of May 25, that: "..... the average general surgeon or practitioner is incompetent to undertake the treatment, and especially to determine the cure of a gonococcus infection of the urethra. By doing so he assumes a burden of responsibility which he has no right to bear....."

The general practitioner does understand fully the serious nature of this loathsome disease and we vigorously protest the assertion that we are "by no means yet conscious of the difficulties of its management or of the responsibility involved in pronouncing it cured."

Gonorrhea patients form the most disreputable part of a man's practice, and no matter how well they are treated, they have no sense of gratitude. As a class, they do not pay their bills; they will not take complete treatment, even though its necessity is carefully explained to them, and the small expenses of microscopic examinations of the prostatic secretions, or a gonococcus fixation test, will be rebelled at and refused.

The solution of the problem as advocated by Dr. Barney is unique. We are advised that "the Public Health authorities should keep on file a list of such physicians throughout the state who, by their training and experience, and *hospital and teaching connections*, are competent to handle venereal disease." If the doctor is sincere in this suggestion, we would say that such a plan would be impossible because it is unconstitutional, for it would be a type of class legislation. We already have a State Board of Registration in Medicine that passes on a man's fitness to practise medicine in this state. He is not restricted to certain kinds of work nor is he classified according to his ability, but he is allowed to practise medicine and surgery in their entirety.

"We are holier than thou," appears to be the motto of a certain group of men in Boston today. There seems to be an intrigue among some of these men to crush down the rest of the profession. Careful reading of Dr. Barney's article will make one wonder if undue emphasis has not been placed on the "teaching and hospital connections" as a qualification for a place on the remarkable list of physicians that he suggests the state might form. How fine for the chosen ones to declare that they are the certified state physicians for the care of gonorrhea,—and how their less fortunate brothers, who could not convince the local politician that they were competent and equipped to treat such cases, would wince at the injustice!

The restriction of the field of medicine to one petty specialty, with its resulting narrow and biased vision, is one of the faults and dangers of present-day medicine. The specialists become ultra-radical and almost fanatics in the consideration of their problems. The general practitioners are treating and curing thousands of cases. The worst of these cases drift into

the metropolitan hospitals and are treated by the specialists, who there form the idea that all cases in general practice are similar to these, and that the general practitioner is therefore incompetent to treat them.

The depreciation and maligning of the general practitioner must stop. We are willing to be instructed by proper articles in the medical journals on new methods of treatment but,—we refuse to be insulted and held up to false ridicule.

Very truly yours,
HERBERT J. CRONIN, M.D

AN EXPLANATION.

BOSTON, May 25, 1916.

Mr. Editor: It has been called to my attention that my paper on Acid Autointoxication in Infancy and Childhood, which appeared in the BOSTON MEDICAL AND SURGICAL JOURNAL, April 20, 1916, has been criticized on the ground that many of the statements in it were copied from other articles. This criticism is unquestionably true, much of the data on the chemistry of the subject having been taken from the abstract of the meeting of the New York Academy of Medicine on Acidosis, which appeared in the *Journal of the American Medical Association* of January 8, 1916. Most of the rest of the data were taken from von Noorden's Acid Autointoxication, published by E. B. Treat & Co.

It did not seem necessary to me specifically to give credit for what was taken from these sources, because, in my opinion, they were merely good statements of what was common knowledge. If anyone feels offended that credit was not specifically given, I hereby most humbly beg his pardon. I may say, in passing, that it never occurred to me that anyone would look upon the preliminary portion of my paper as anything more than a statement of the present opinion on this subject, or that anyone would for a moment suppose that I personally, being solely a clinician, should have any first-hand knowledge of such an obscure subject as the chemistry of acidosis.

Yours very truly,
JOHN LOVETT MORSE, M.D.

THE USE OF NITROUS-OXIDE AND OXYGEN IN THE TREATMENT OF FUNCTIONAL NERVOUS DISEASES.

WELLESLEY HILLS, MASS., May 25, 1916.

Mr. Editor: In using nitrous-oxide and oxygen for several years in dental operations the author has many times been impressed with the marked improvement manifested by many patients (as the result of suggestions in a certain stage of analgesia with the above anesthetic) who had been sufferers from a variety of ailments of nervous or mental origin. Now after observing a considerable number of cases, it would seem safe to predict that this agent will be of great value in psycho-therapy and psycho-analysis.

The particular stage of analgesia necessary for best results in the great majority of cases, has so much to commend it, with practically no counter-indications, that it would seem much preferable to a state of hypnosis, which has so often been used in treating these diseases, and the ease with which the majority of patients can assist in exploring the so-called "sub-conscious" mind, and the quick response to intelligent suggestion, are points which should encourage its use for the diseases indicated, but only by those with a most thorough knowledge of the administration of the anesthetic.

Two cases (all that the author has had opportunity to observe of this type) of seemingly hopeless alcoholism, where the mental condition of patients seemed to indicate unsound mind, have responded splendidly to the treatment, as well as a number of other functional nervous diseases, and it would seem that there is a very large field for its application, including its employment in the treatment of abnormal mental, nervous and even criminal tendencies. It would be desirable that its use, and the results obtainable, be observed by those who come in contact continually with these ailments.

Very truly yours,
SHELLEY B. OSBORNE, D.M.D.

NOTICES.

NAVY MEDICAL CORPS EXAMINATIONS.—Among the various items of increase in national preparedness which it is hoped will be afforded by the present session of Congress, is that authorizing an appropriate increase in the personnel of the military services. One item of interest to the medical profession of the country is that calling for an increase in the Medical Corps of the Navy from its present strength of 347 to approximately 500. The openings at present afforded young graduates in medicine for entering the Medical Corps of the Navy will be materially increased in prospects and rewards, therefore, if such an increase is provided.

An examination will be held on June 19, next, for appointment in the Medical Corps to vacancies already existing. A candidate for appointment must be between 21 and 30 years of age, a graduate of a reputable school of medicine, and must apply for permission to appear before an examining board. These boards are convened at various places over the country, and assignments to such boards are arranged to suit the convenience of the candidate.

Duty in the Medical Corps of the Navy is one that affords plenty of rewards to the ambitious worker, as well as attractions of a varied nature in personal and professional work. Pay begins at the rate of $2,000 per annum, with ample allowances, and promotion and increase in pay and allowances follow every few years.

It is hoped that the young men of the United States will take advantage of this attitude of the nation, now on the threshold of expansion in national ideals of preparedness, and find in the service of their country an outlet for their future life work.

For detailed information as regards the coming examination, on June 19, 1916, applicants should address the Surgeon General, U. S. Navy, Navy Department, Washington, D. C.

UNITED STATES CIVIL SERVICE EXAMINATION.—The United States Civil Service Commission announces an open competitive examination for clinical director, for men only. From the register of eligibles resulting from this examination, certification will be made to fill a vacancy in this position in the Government Hospital for the Insane, Washington, D. C., at a salary of $2,000 per annum, with maintenance in the hospital, and vacancies as they may occur in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Applicants must be graduates of a medical school of recognized standing, and must have been in actual charge of a medical service in an institution for the care of the insane for at least five years, during the entire period of which time they must have received special training in psychiatry. They must have contributed to medical literature (*a*) on the general subject of insanity in some of its phases, or (*b*) by report of cases coming under their observation.

The appointee, in his capacity as clinical director, will have general administrative supervision of the medical work of the hospital, together with supervision and care af the hydrotherapeutic department,

operating room, and training school for nurses; all transfers of patients from one service to another will be made through him; he will have charge of the clinical records and will see that they are properly kept, and be in a position to offer suggestions that recent medical literature may contain along the lines of clinical psychiatry.

Statements as to education, training, and experience, are accepted subject to verification. Applicants must not have reached their thirty-fifth birthday on the date of the examination. This examination is open to all men who are citizens of the United States and who meet the requirements.

Persons who meet the requirements and desire this examination should at once apply for Form 1312, stating the title of the examination desired, to the United States Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Post Office, Boston, Mass., Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Cal., Custom House, New York; New Orleans, L., Honolulu, Hawaii; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone; or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.. Applications should be properly executed, excluding the medical and county officer's certificates, and must be filed with the commission at Washington prior to the hour of closing business on June 27, 1916.

ARMY MEDICAL CORPS EXAMINATIONS.—The Surgeon General of the Army announces that preliminary examinations for the appointment of First Lieutenants in the Army Medical Corps will be held on July 17, 1916, and August 14, 1916, at points to be hereafter designated.

Full information concerning these examinations can be procured upon application to the Surgeon General, U. S. Army, Washington, D. C. The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as an interne, after graduation. The examinations will be held simultaneously throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received in order to lessen the traveling expenses of applicants as much as possible.

In order to perfect all necessary arrangements for the examination, applications must be completed and in possession of the Adjutant General, at least three weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There will be more than 100 vacancies to be filled after July 1, when the bill for the reorganization of the army becomes a law.

THE PSYCHOPATHIC HOSPITAL, 74 Fenwood Road, Boston.—Fourth annual conference on the Medical and Social Work of the Psychopathic Hospital, Saturday, June 10, 1916, 4 to 6 P.M., under the auspices of the Trustees of the Boston State Hospital

PROGRAM.

PRESIDENT HENRY LEFAVOUR, Chairman of the Board of Trustees, will preside.

I. "The Classes of Service Rendered by the Psychopathic Hospital, Medical, Public, Social, Individual," Dr. E. E. Southard, Director, Psychopathic Hospital.

II. "Social Service from the Medical and Psychiatric Points of View," Dr. H. M. Adler, Chief-of-Staff, Psychopathic Hospital.

III. "New Administrative Problems, Intramural and Extramural, of the Psychopathic Type of Patient," Dr. E. H. Cohoon, Administrator, Psychopathic Hospital.

Brief recess.

IV. "The Situation in the Problem of Brain Syphilis," Dr. H. C. Solomon, Special Investigator, State Board of Insanity, Massachusetts.

V. "Advances in Psychological Examination, Especially of Psychopathic Patients," R. M. Yerkes, Ph.D., Psychologist, Psychopathic Hospital.

VI. "Mental Hygiene and Preventive Medicine," Dr. T. W. Salmon, Medical Director, National Committee for Mental Hygiene.

Before the meeting, small groups of visitors may be taken over characteristic portions of the hospital.

Displays of the scientific work of the hospital will be found in the out-patient department, in the library, in the laboratories, and in the assembly room, including:

1. Diagnostic wall-charts.
2. Social service statistics.
3. Psychological test apparatus.
4. Clinicopathological work.
5. Researches,

The work of the pathological service and the bureau of standards of the State Board of Insanity may also be looked over by interested visitors in the special rooms assigned thereto.

SOCIETY NOTICES.

HARVARD MEDICAL ALUMNI ASSOCIATION.—The annual meeting of the Harvard Medical Alumni Association will be held in Harvard 5 at 12.30 o'clock on Commencement Day, Thursday, June 22. At this meeting a change in the Constitution is to be voted on, the purpose of which is to do away with the initiation fee and the first year's dues in order to encourage new members. For this purpose it is proposed to change Section 3 to read as follows:

"Every member shall pay after his first year of membership an annual due of one dollar; but any member may become a life member by the payment of twenty dollars in one payment, after which he shall be relieved from the payment of all dues."

A. B. EMMONS, 2d, M.D., *Secretary.*

SECOND ANNUAL MEETING OF THE INTERSTATE ASSOCIATION OF ANESTHETISTS.—The second annual meeting of the Interstate Association of Anesthetists will be held at the Hotel Seelbach (Red Room), Louisville, Ky., July 25, 26 and 27, in conjunction with the National Dental Association.

The following program has been arranged for the scientific sessions:

Address of Welcome and Presentation of Gavel, L. S. McMurtry, Louisville, Ky.; Chairman's Address. Progress in the Technical Administration of Anesthesia and Analgesia, William Hamilton Long, Louisville, Ky.; Anesthesia, the Anesthetist and the Operative Procedure from the Surgeon's Viewpoint, F. G. DuBose, Selma, Ala.; Metabolic and Organic Changes Under Anesthesia, Evarts Graham, Mason City, Ia.; Preparatory Anesthetic and Post-operative Regime for Hazardous Risks in Genito-Urinary Surgery, Moses Salzer, Cincinnati, O.; A New Method for the Production of General Analgesia and Anesthesia, D. E. Jackson, St. Louis, Mo.; Nitrous Oxid-Oxygen in Obstetrics, Carl H. Davis, Chicago, Ill.; Ether-Oil Colonic Anesthesia in Head and Neck Operations, Joseph E. Lumbard, New York City; Some Direct and Indirect Dangers of Nitrous Oxid-Oxygen and Its Ultimate Position in Major Surgery, John N. Heim, Louisville, Ky.; Oral Hygiene in Relation to Anesthesia and Analgesia, Bion R. East, Detroit, Mich.; Control of Circulatory Disturbances Under Anesthesia and Analgesia, Hewett of Chicago, and Chloroform Anal-

gesia, William Harper Deford, Des Moines, Ia.; Crawford W. Long and Ether, E. M. Magruder, Charlottesville, Va.; The Romance of Evans and Nitrous Oxid. Edward C. Kirk, Philadelphia, Pa.; Hickman, a Forgotten Pioneer, C. J. S. Thompson, London, Eng.

An innovation will be a special Section of Dental Anesthetics, for which the Association will adjourn to MacCauley's Opera House. The special program for this joint session with the National Dental Association will be as follows:

Introductory, William Hamilton Long; Chairman's Address: Anesthesia and Analgesia in the Curriculum, the Clinic and Private Practice, Hugh W. MacMillan, Cincinnati, O.; Oral Operations Under Nitrous Oxid-Oxygen Anesthesia in the Forward-Inclined, Sitting Posture, Ira O. Denman, Toledo, O.; Vapor Anesthesia for Oral Surgery, Truman Brophy, Chicago, O.; Intra-Oral Methods of Local Anesthesia, Rich. H. Riethmuller, Philadelphia, Pa.; Extra-Oral Methods of Local Anesthesia, Kurt H. Thoma, Boston, Mass.; Handling Emergencies Under Anesthesia and Analgesia, N. T. Yager, Louisville, Ky.

The Association Dinner will be served at the Hotel Seelbach and a number of prominent after-dinner speakers will enliven the occasion with their wit and humor. Special entertainment will be provided for all lady guests attending the Louisville meeting.

For further information and dinner reservations address

F. H. McMECHAN, M.D., *Sec-Treas.*,
Avon Lake, Ohio.

AMERICAN MEDICAL EDITORS' ASSOCIATION.—The annual meeting of this Association will be held at the McAlpine Hotel, New York City, on October 25 and 26.

A most interesting program is in course of preparation and the Local Committee, composed of the following members, is an assurance of a successful convention.

Dr. Thomas L. Stedman, Editor, *Medical Record*, chairman.
Dr. R. H. Sayre, *New York Medical Journal.*
Dr. Brooks H. Wells, Editor, *American Journal of Obstetrics.*
Dr. Frank C. Lewis, *International Journal of Surgery.*
Dr. Ira S. Wile, *American Medicine.*

The officers of the Association for 1915 and 1916 are as follows:

Dr. Edward C. Register, President.
(*Charlotte Medical Journal*, Charlotte, N. C.)
Dr. W. A. Jones, First Vice-President.
(*Journal Lancet*, Minneapolis, Minn.)
Dr. G. M. Piersol, Second Vice-President.
(*American Journal of the Medical Sciences*, Philadelphia, Pa.)
Dr. J. MacDonald, Jr., Secretary and Treasurer.
(*American Journal of Surgery*, New York.)

EXECUTIVE COMMITTEE.

Dr. C. F. Taylor, *Medical World*, Philadelphia, Pa.
Dr. John C. MacEvitt, *New York State Journal of Medicine*, New York.
Dr. A. S. Burdick, *American Journal of Clinical Medicine*, Chicago, Ill.
Dr. Joseph MacDonald, Jr., *American Journal of Surgery*, New York.

The meeting on October 25 and 26 will be devoted exclusively to problems of a strictly journalistic nature, which will be of importance and interest to every editor and publisher of a medical journal. Among the papers to be presented are the following: "Editorial Control," "The Editor's Prerogative in Editing Original Articles," "Book Reviews in Medical Journal," "Problems of the Subscription Department," "The Relationship Between Medical Journals of the Day," "The Uplift in Medical Journalism," "The Influence of the Medical Press and Profession in Public Affairs," "The Rights of an Author in the Disposition of his Contribution," etc.

ESSEX NORTH DISTRICT MEDICAL SOCIETY.—A Summer Outing of the Essex North District Medical Society will be held on the beautiful grounds of the Merrimack Valley Country Club, Methuen (Tel. Lawrence 8442), Wednesday, June 14, 1916, at 2 P.M. sharp. The Club House is situated upon the Lawrence-Haverhill line of the Massachusetts Northeastern Street Railway Company and also upon an excellent highway from Haverhill via River Road. An efficient committee has arranged a series of sports beginning with a ball game at 2, followed by 100-yard dash, fat men's race (180 pounds and over), 3-legged race, tug-of-war, etc., for which there will be suitable prizes. Excellent facilities for tennis, bowling and golf will be at the disposal of Fellows. An appetizing dinner will be served by the Club chef at 5 P.M. sharp, at $1.25 per plate. Parking space gratis. Medical friends may be invited. Come and enjoy the fun and participate p. r. n.

F. B. PIERCE, M.D., *President.* J. FORREST BURNHAM, M.D., *Secretary*, 99 Bradford St, Lawrence, Mass.

APPOINTMENTS.

HARVARD UNIVERSITY.—Dr. Ernest E. Tyzzer has been appointed George Fabyan Professor of Comparative Pathology, and Dr. Charles J. White is appointed Edward Wigglesworth Professor of Dermatology.

UNIVERSITY OF BRESLAU.—Dr. Ernst Gaupp of the University of Königsberg has been appointed professor of anatomy at the University of Breslau.

UNIVERSITY OF OHIO.—Dr. Clyde Brooks of the University of Pittsburgh, has been appointed professor of physiology, pharmacology and physiologic chemistry at the medical school of the University of Ohio.

UNIVERSITY OF OREGON.—Dr. William F. Allen, formerly instructor in anatomy at the University of Minnesota, has been appointed professor of anatomy in the medical department of the University of Oregon.

UNIVERSITY OF VIRGINIA.—Dr. Alfred L. Gray has been appointed professor of roentgenology, and Dr. Charles H. Lewis, professor of physiology.

RESIGNATIONS.

ST. ELIZABETH'S HOSPITAL.—It is announced that the following members of the staff of St. Elizabeth's Hospital, Brighton, have recently submitted their resignations to take effect on May 1, 1916: Dr. John W. Lane, Dr. Michael J. Cronin, Dr. Thomas F. Green, Dr. Andrew F. Downing and Dr. Herbert L. Johnson.

RECENT DEATHS.

DR. JAMES F. COSTELLO, who died on May 24, at Wollaston, Mass., was born in Quincy, Mass., in 1890. He received the degree of A.B. from Tufts in 1911, and that of M.D., in 1913. After serving as house officer in St. Vincent's Hospital, Worcester, for a year, he settled, in 1914, in the practice of his profession in Boston.

DR. S. M. BRICKNER, who died at Saranac Lake, on May 5, was born in 1868. He was a physician at Sloan Maternity and Mt. Sinai Hospitals, New York, and was known as a gynecologist and anatomist.